

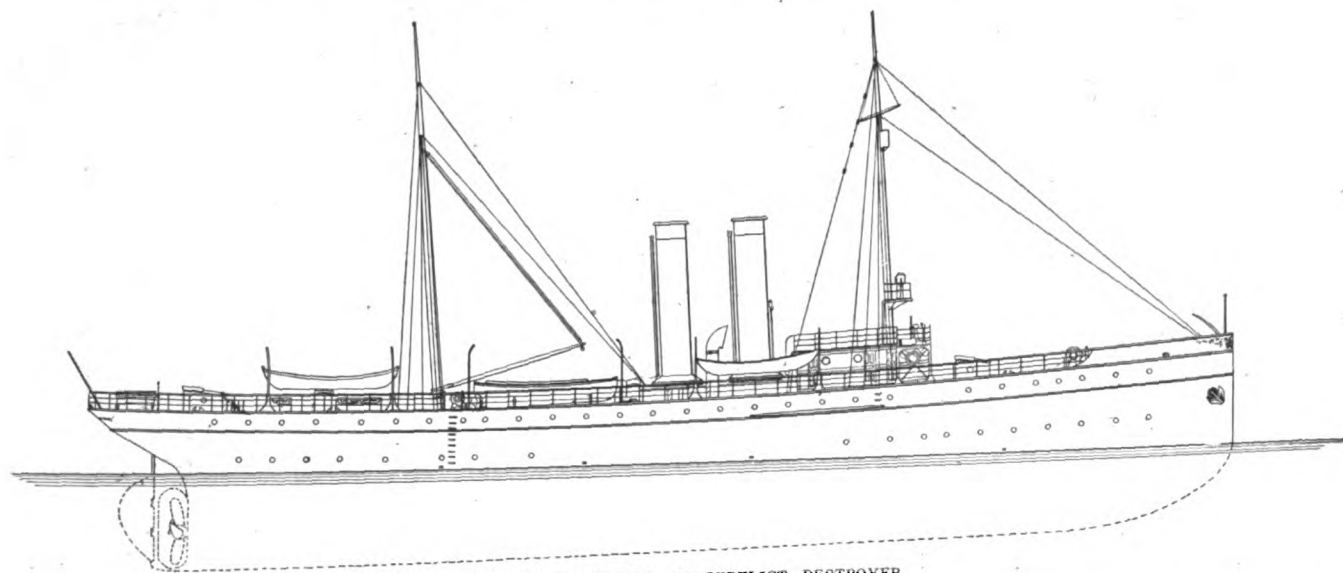
THE MARINE REVIEW

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No. 23

NEW UNITED STATES DERELICT DESTROYER



OUTBOARD PROFILE OF DERELICT DESTROYER.

Queenstown, April 18.—The British steamer Asuncion de Larrinaga from Galveston, March 28, for Manchester, passed Browhead today and signaled that she had on board the crew of the Norwegian bark Ennerdale.

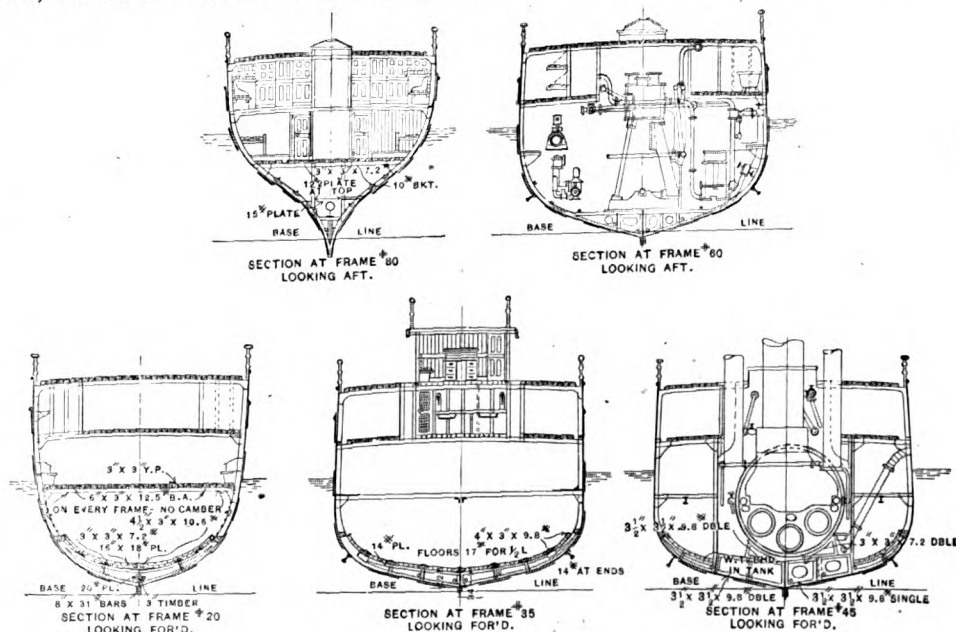
The Ennerdale, which left Gulfport, March 12, for Buenos Ayres, was passed waterlogged and abandoned April 4 in latitude 29.25, longitude 79.46 by the British steamer Lord Iveagh, which arrived at Norfolk, April 9. The Asuncion de Larrinaga evidently rescued the crew of the Ennerdale.

Reports like the foregoing, appearing almost daily in the columns of the press, keep us constantly reminded of the fact that there are as great, if not greater, dangers to be encountered at sea, than heavy weather or icebergs. There are many such vessels, "waterlogged and abandoned," drifting aimlessly along with the current year after year, some of them covering many thousand miles in their journeyings, a constant menace to the ships in whose track they may be, nearly totally submerged and with decks awash.

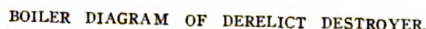
The fast-mail flyer, traveling at 20 knots an hour, with collision bulkheads, water-tight compartments, and all the latest safety devices, *might* be able to continue on her way after coming in

contact with one of these ocean wanderers, but the average old tramp ship, not

similarly equipped, packed with freight from stem to stern, stands a poor chance

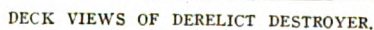


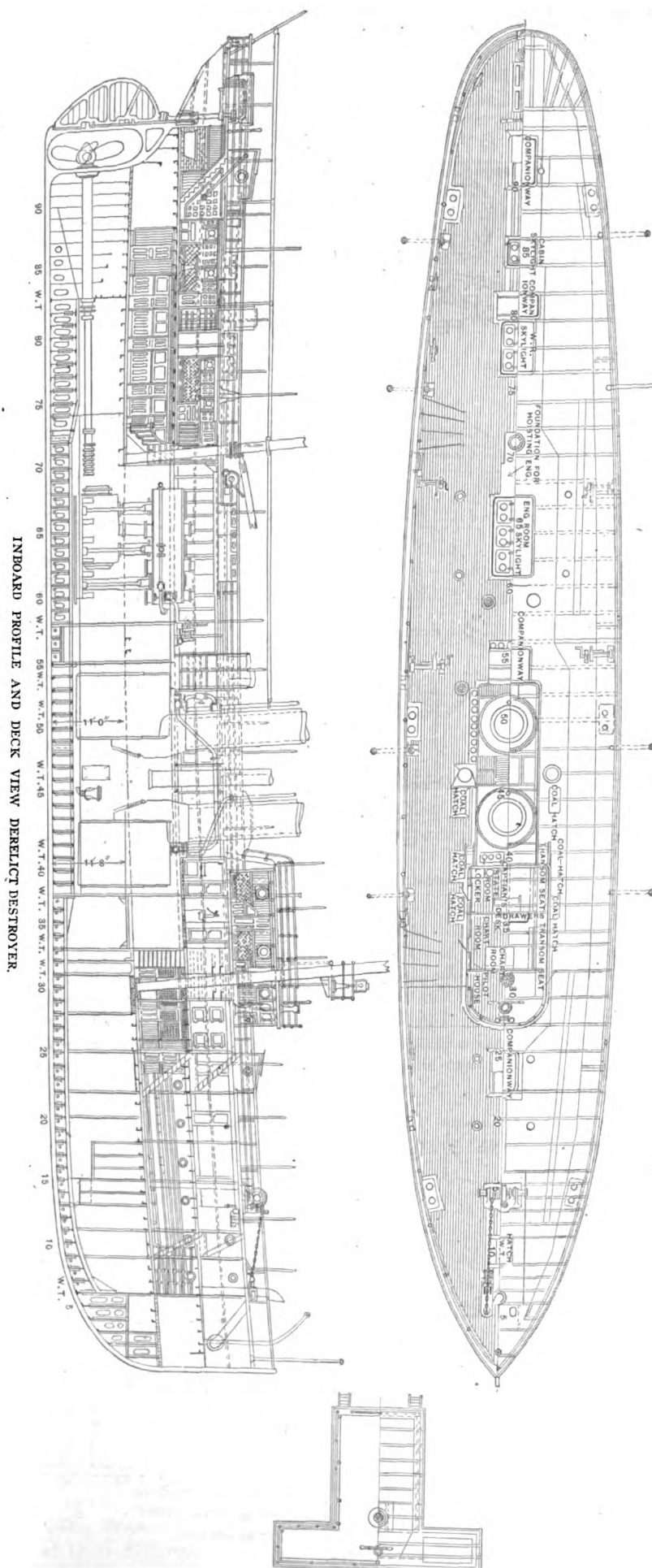
SECTIONAL VIEWS OF DERELICT DESTROYER.



the navy and revenue cutter service, to destroy the derelict, but it has fallen to the lot of the United States government to commence an organized crusade against this great menace to navigation.

opened at the treasury department, Washington, for the construction of the first derelict destroyer. As there was only one bidder, the Pusey & Jones Co., Wilmington, Del., and, as its bid of \$325,000 was more than the appropri-





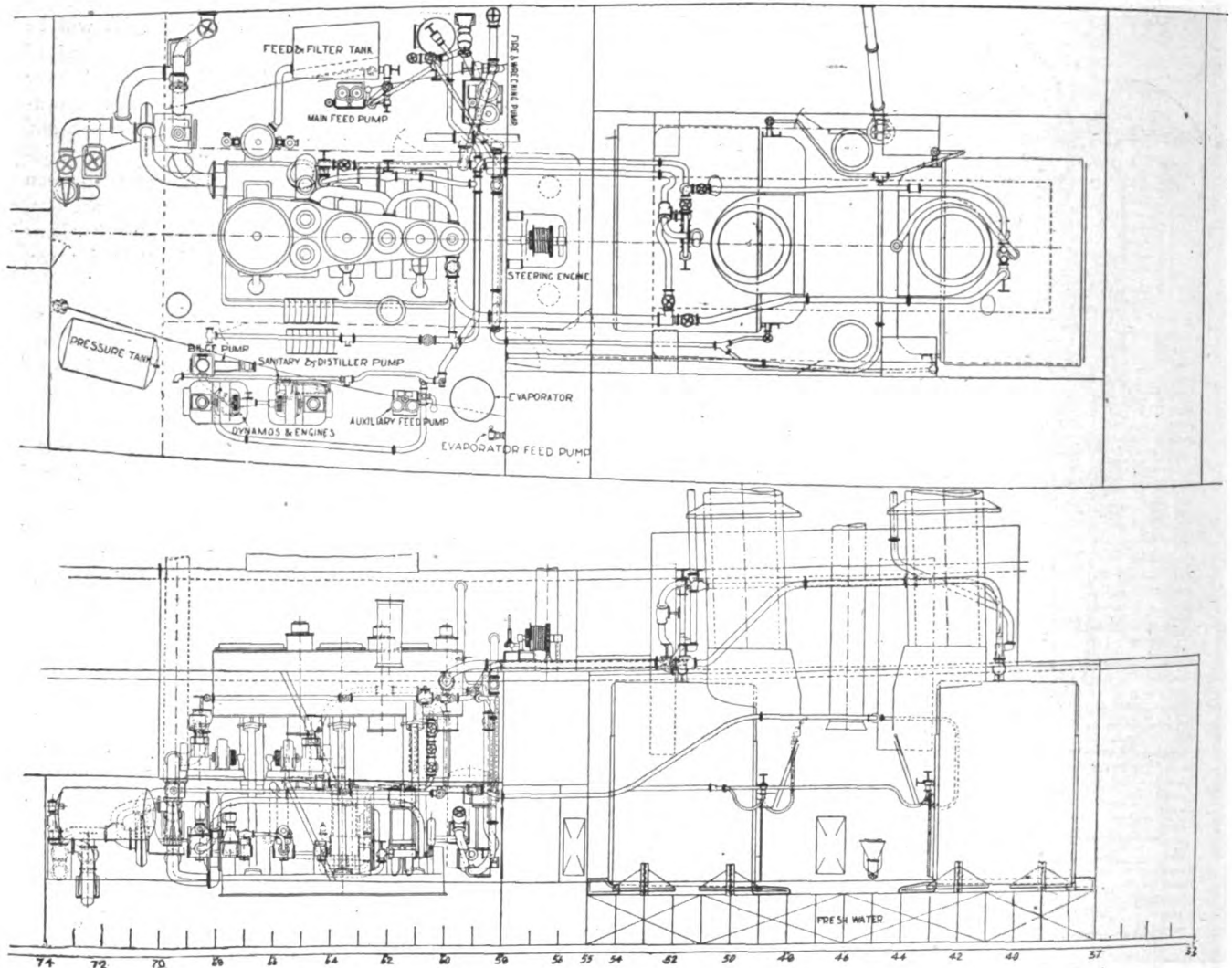
tion, new bids will be solicited. This destroyer, Revenue Cutter No. 17, will be the largest vessel in the service, and of the following dimensions: Length over all, 204 ft. 10 in.; length between perpendiculars, 188 ft.; breadth of molded beam, 34 ft.; depth at side from base line amidships, 25 ft. 9 ins. Displacement to mean load draft of 15 ft. 6 in. above base line, with 300 tons of coal and 26,500 gallons of water on board and ready for sea, 1,480 tons.

The machinery installation will consist of one inverted-cylinder triple-expansion engine, having one high-pressure cylinder 20 in., one intermediate-pressure cylinder 32 in., and one low-pressure cylinder 52 in. in diameter. The stroke will be 36 in. The indicated horsepower of the main engines will be about 1,500 when making the maximum number of revolutions per minute. The main valves will be of the piston type for the high-pressure, intermediate-pressure, and the low-pressure cylinders. All will be worked by the Stephenson link motion, with double-bar links. The crank, line, and propeller shafts, piston rods and all working parts generally will be of mild open-hearth steel. The length of the crank shaft will be 17 ft. 9 in. over all, with pins and journals $10\frac{1}{8}$ in. in diameter. The thrust shaft will be forged in one section, $10\frac{1}{8}$ in. in diameter and about 8 ft. 8 in. long over all. The shaft will have nine thrust collars. The propeller shaft will be 11 in. in diameter, and will be completely encased in the tube, with a protective composition; the propeller to be right-handed, of manganese-bronze, with a diameter of 11 ft. 6 in., and of the built-up type. The main condenser will have a cooling surface of 2,092 sq. ft., the circulating water being supplied by one independent centrifugal pump. There will be one attached air pump and two attached feed pumps, worked by beams from the low-pressure crosshead.

There will be two single-ended boilers of the Scotch type, carrying a working pressure of 180 lbs. per sq. in. The general dimensions will be: Diameter of shell (inside), 14 ft.; length over heads (bottom), 10 ft. 3 in.; number of furnaces, 3; diameter of furnaces (inside), 42 in. Total grate surface, 63 sq. ft. Total heating surface, 1,930 sq. ft.

Her auxiliary pumping machinery consists of one fire-and-wrecking pump of the vertical duplex type, one horizontal bilge pump of the double-acting simplex type, one auxiliary feed pump of vertical duplex type, an evaporator feed, distiller circulating and sanitary, and air compressing pump. Besides the attached air and feed pumps already mentioned, there are attached bilge pumps.

There will be an evaporating and dis-

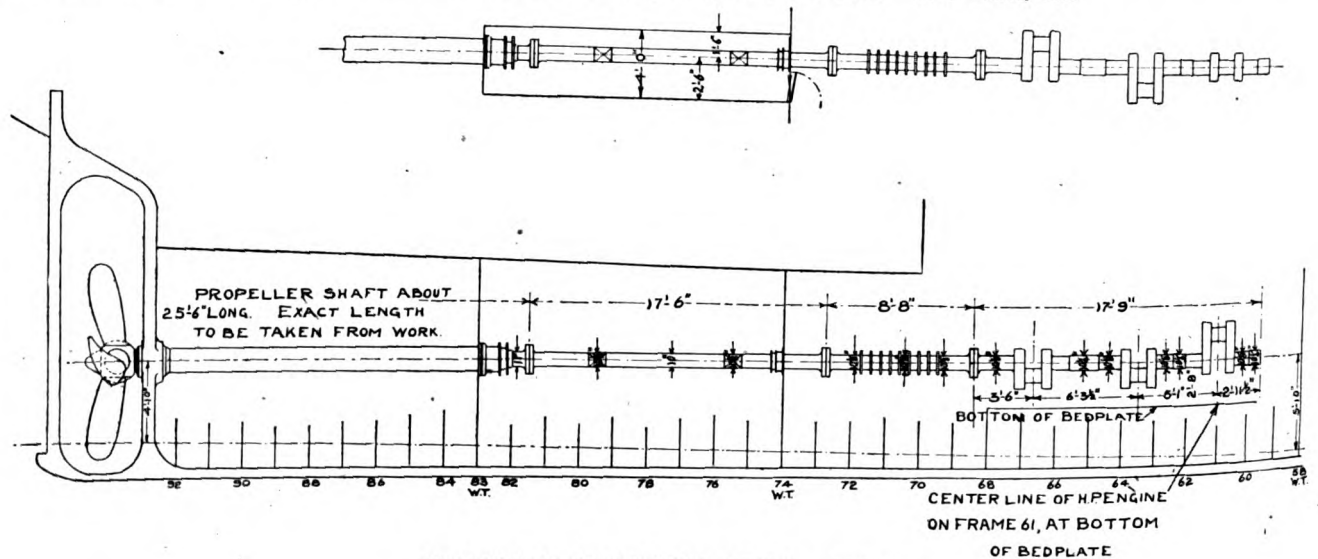


GENERAL ARRANGEMENT OF MACHINERY OF DERELICT DESTROYER.

tilling plant of a capacity required to produce about 3,000 gallons of potable water per twenty-four hours, a feed-water heater of approved design, to have about 150 sq. ft. of heating surface, the heating agent to be exhaust steam, and a combined feed and filter tank. Four fresh-water tanks formed by the hull

proper, water-tight bulkheads, and berth-deck plating will be located at the after end of the main hold, and have a capacity of 12,400 gallons. The trimming tanks will extend as follows: The forward tanks from the transverse bulkhead at frame 6 forward to the stem and up to the berth-deck plating, and the after

one from frame 83 aft and up to the berth-deck plating. Bilge keels will be fitted, with a depth of 15 in. and extending about 85 ft. amidships. The double bottom will extend the length of the boiler space and be divided into water-tight compartments, with suitable man-hole doors, etc.



ARRANGEMENT OF SHAFTING, DERELICT DESTROYER.

WORK IN COAST YARDS.

Four 6-pounder rapid-fire guns will be mounted on the spar deck, two forward and two aft, an armory also being installed, with the usual racks for stowing cutlasses, rifles, revolvers, etc. A general alarm system will be installed at engine room, wardroom, and crew space.

There will be two duplicate electric generating sets of an approved direct-connected marine type, driven by vertical engines and each to be of 10 kilowatts capacity, with 125 volts pressure at the terminals, and a working range of electromotive force from 110 volts, no load,

Cobb, Butler & Co., Rockland, Me., will launch the three-masted schooner, Wawanee in June.

The Old Bay line steamer Gaston is undergoing repairs at the yard of James Clark & Co., Baltimore, Md.

The United States engineers' dredge Manhattan is at the yard of Theo. A. Crane's Sons, Erie Basin, Brooklyn, N. Y., for extensive repairs.

The army cable steamer Cyrus W.

ette, which was built to the order of the Rufus Deering Co., Portland, Me., by F. S. Bowker & Son, Phippsburg, Me., was launched May 14.

The Merchants' & Miners' liner Chatham has recently been given a general overhauling at the yard of the Newport News Shipbuilding & Dry Dock Co., Newport News, Va.

Tarr & James, Essex, Mass., are building a fishing schooner for Capt. L. Spinney which will be ready for launching in a few weeks. She is to be named John Hays Hammond.

The steamer Powhatan, of the Merchants' & Miners' line, will be given a general overhauling soon at the yard of the Newport News Shipbuilding & Dry Dock Co., Newport News, Va.

The steamer Eva, owned by Gus Anderson, Moss Point, Miss., was recently sent to the yard of the Morse Iron Works & Dry Dock Co., Brooklyn, N. Y., for extensive repairs throughout.

A 550-ton barge was launched May 18 by Kelley, Spear & Co., Bath, Me., for the Sagadahoc Towing Co., which is to be known as S. T. Co. No. 2. Work on No. 3 was immediately begun.

Charles Rohde & Sons, Baltimore, Md., recently launched an endless bucket dredging machine for the Potomac Dredging Co., Washington, D. C. It is 90 ft. in length, 30 ft. beam and 9½ ft. deep.

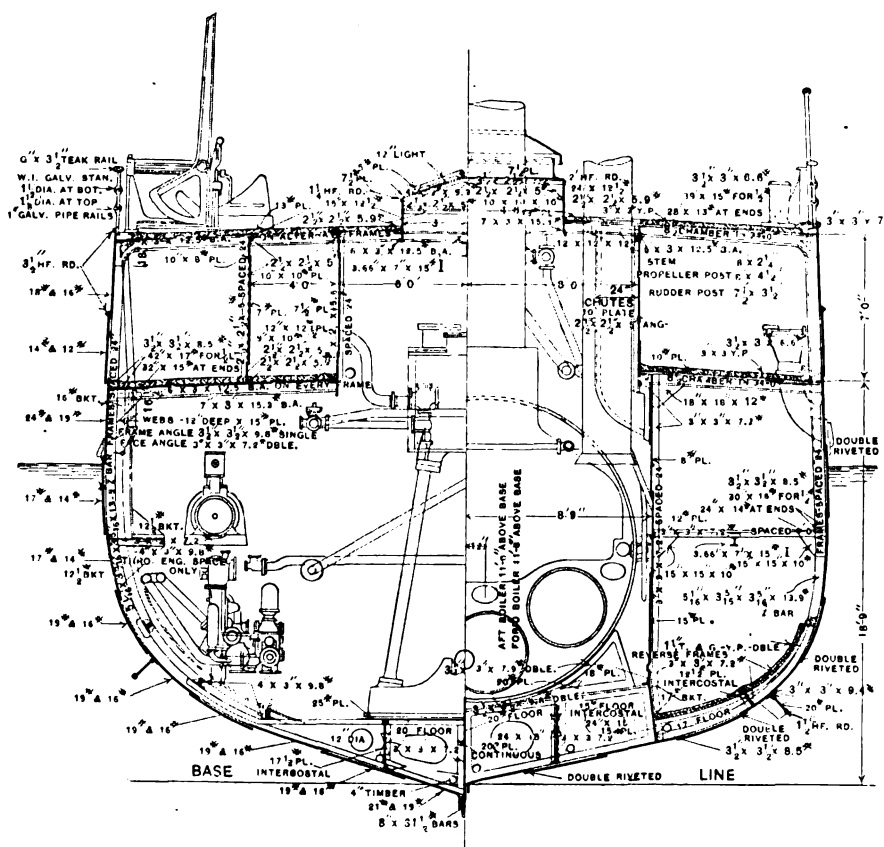
The United States cable ship Burnside is to be given a thorough overhauling and repairing at the yard of the Heffernan Engine Works, Seattle, Wash. The work will cost approximately \$40,000.

The Kellogg Transportation Co., Portland, Ore., has laid the keel for a stern-wheel steamboat 140 ft. long and 26 ft. beam. She is to be capable of carrying about 400 tons of freight and 200 passengers.

The steamer Creole, which was built by the Fore River Shipbuilding Co., Quincy, Mass., for the Morgan line, the vessel end of the Southern Pacific Co., underwent a successful builders' trial trip recently.

The freight steamer New Haven was launched at the Roach Ship Yard, Chester, Pa., on May 11. She is for the Consolidated Railroad Co., and when completed will ply between New York and New Haven.

The Hudson river steamer Chrystenah has been entirely rebuilt and is now on her former run between Peekskill and New York. She has a new boiler, which was installed by P. Delany & Co., Newburgh, N. Y.



SECTION THROUGH MACHINERY SPACE OF DERELICT DESTROYER.

to 115 volts, full load. The electric night-signaling apparatus will consist in general of a keyboard, cable connections, and four double signal lanterns, secured on a ladder suspended from an outrigger located on the foremast, and one 18-in. searchlight. A wireless telegraphy equipment will also be installed.

Two of the six pair of lifeboat davits will be of the quadrant type, the lower blocks in all being fitted with the Raymond releasing hook. She will have a full equipment for destroying derelicts, wreckage, and other obstructions, and have a steaming radius of 5,000 miles.

Plans have been drawn for a new ice breaker for the city of Philadelphia, to be somewhat smaller than the John Weaver. The cost is estimated to be \$250,000.

Field was recently sent to the Morse yard, Brooklyn, N. Y., where she will be given a general overhaul.

The United States scout cruiser Birmingham is to be launched at the yard of the Fore River Ship Building Co., Quincy, Mass., May 29.

The Norwegian steamer Hippolyte Dumois has been cleaned and painted at the yard of the Skinner Ship Building & Dry Dock Co., Baltimore, Md.

The steamer John Rodgers, of the United States lighthouse service, has been sent to the Shooter's Island ship yard for a general overhauling.

J. S. Beacham & Bro., Baltimore, Md., have recently repaired and painted the steel steamer Joppa, owned by the Baltimore, Chesapeake & Atlantic Railway Co.

The three-masted schooner Antoin-

The Clyde liner Comanche is at the Erie Basin of J. H. Robins & Co., Brooklyn, N. Y., for repairs.

The steamer Dorothy, owned by A. H. Bull & Co., New York, was recently docked at the Morse Iron Works & Dry Dock, Brooklyn, N. Y., for a new tail-end shaft.

The new steam lighter which was recently built by Rodermond Bros., Tomkins Cove, N. Y., for the Export Lighterage Co., is having her engines installed at John W. Sullivan's Works, New York.

The German steamship San Miguel has been at the yard of the Skinner Ship Building & Dry Dock Co., Baltimore, Md., for cleaning and painting as well as repairs to her tail-end shaft and propeller.

The four-masted schooner Stella B. Kaplin, 1,000 tons, is at the yard of Tietjen & Lang, Hoboken, N. J., for repairs sustained in a collision with a British tramp off Hatteras. She hails from Greenport, L. I.

The Merchants' & Miners' steamer Howard has been at the yard of the Skinner Ship Building & Dry Dock Co., Baltimore, Md., having been dry docked for repairs and having also been cleaned and painted.

The battleship Nebraska, now being constructed at the yard of the Moran Co., Seattle, Wash., is to be turned over to the government May 31. Her trial trip has shown her to be one of the finest ships afloat.

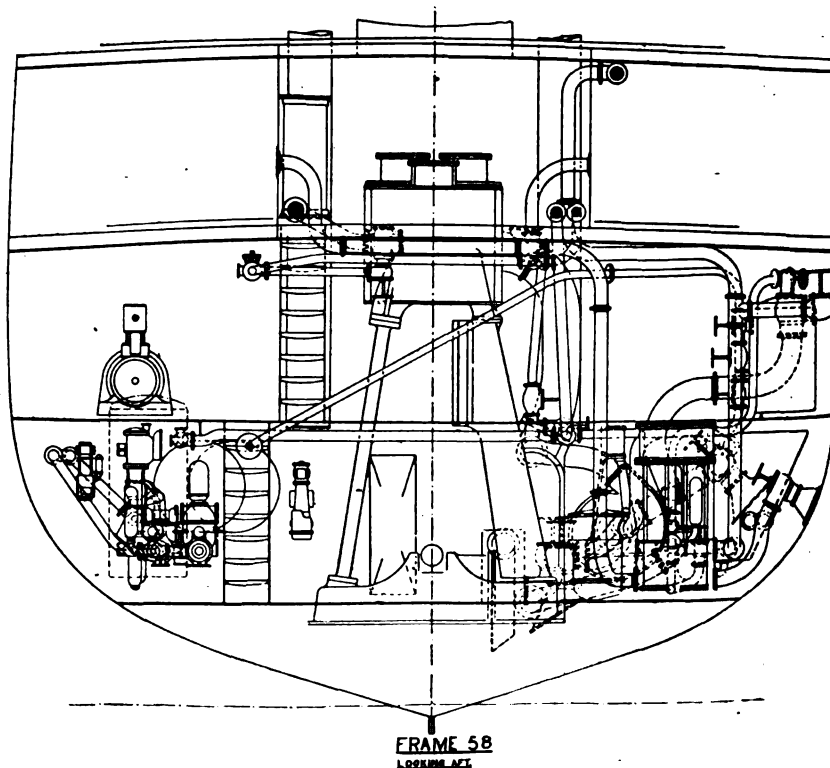
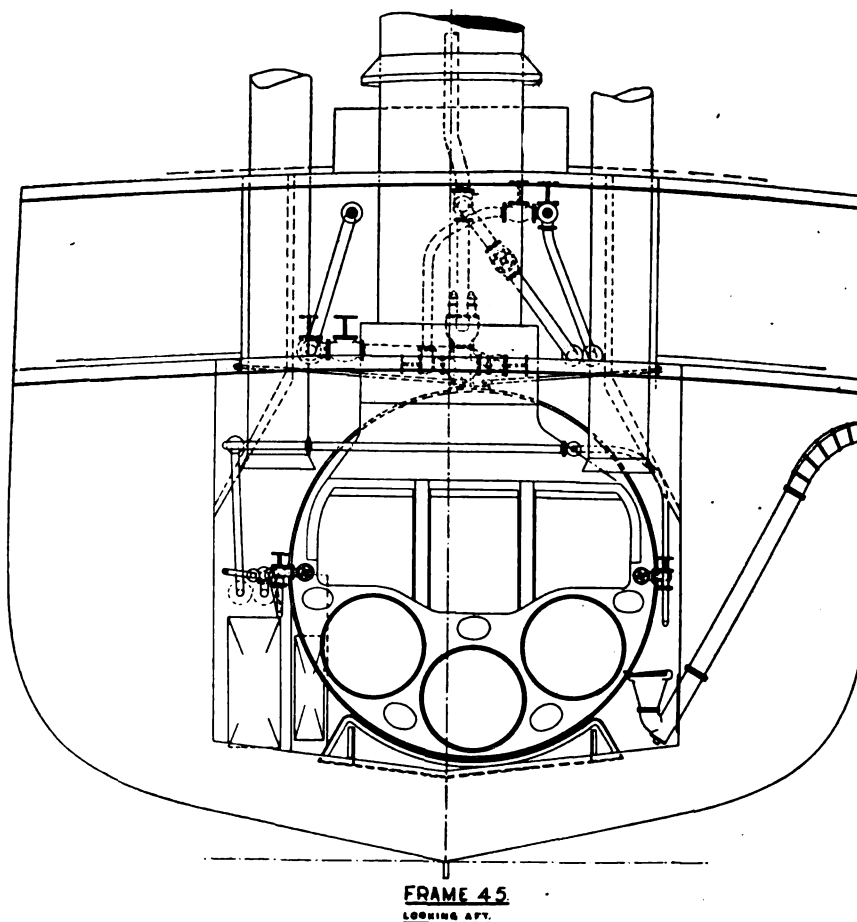
The Old Dominion Steamship Co.'s steamer Hamilton has been sent to the Quintard Iron Works, New York, for a general overhauling of her engines and boilers. Her passenger accommodations are also to be increased.

The tug Goliah, building at the yard of John B. Dialogue & Son, Camden, N. J., for the Shipowners & Merchants' line, San Francisco, was launched recently. The tug is a sister vessel to the Hercules and is 150 ft. long.

The Baltimore, Chesapeake & Atlantic Railway Co.'s steamers Chesapeake, Maryland, Maggie, Choptank and Corsica are at the yard of James Clark & Co., Baltimore, Md., for the purpose of having their machinery and boilers overhauled.

Thomas McCosker & Co., Baltimore, recently launched the second of two 80-ft. lighters, built to the order of the Norfolk & Western railroad and have also started work on a tug for Baltimore owners, which is to be 110 ft. in length.

A new steamer for the Anderson Steamboat Co., was launched at Leschi Park, Seattle, Wash., May 11. The



ARRANGEMENT OF MACHINERY OF DERELICT DESTROYER.

steamer was designed for the excursion business and will run between Junita, Kirkland and Seattle. She was christened Urania.

The Norwegian steamer *Eva* was recently purchased by A. H. Bull & Co. and is now in dry dock at the Morse Iron Works & Dry Dock Co.'s plant, Brooklyn, N. Y., where she is receiving a new bottom and other extensive repairs.

The Atlantic Transport Co.'s car float D is being partially rebuilt at the yard of Charles Rohde & Sons, Baltimore, and the schooner F. and T. Lupton, of Newport, R. I., is also being repaired at this yard as well as several barges and tugs.

The strike among the iron workers

to be sold at auction to the highest bidders. They are the wooden bark *Marion*, the wooden sloop *Keystone State*, and the transport *Lawton*. The latter and the *Marion* are at Mare Island.

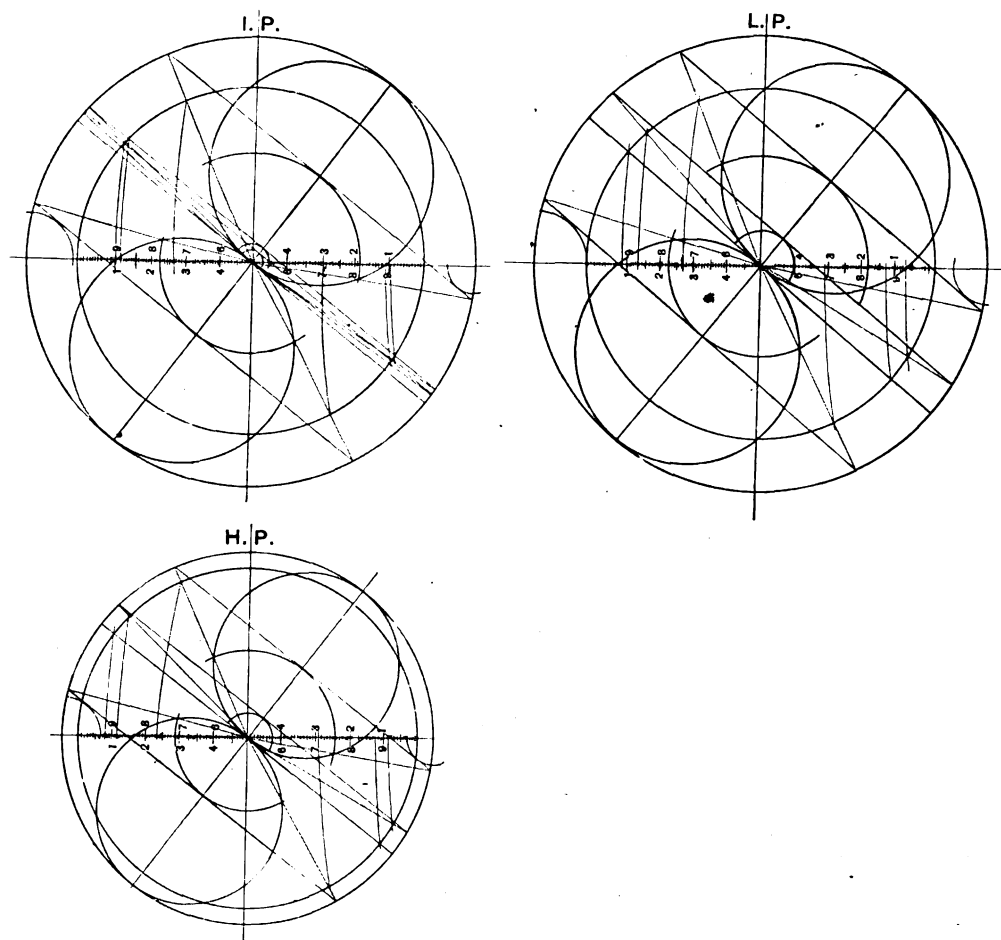
The work of lengthening the Old Dominion liner *Princess Anne* 46 ft. was recently completed at the yard of the William Cramp & Sons Ship & Engine Building Co., Philadelphia, and she departed for Norfolk with much enlarged capacity and improved appearance.

The Craig Shipbuilding Co., former-

at the yard of the Newport News Shipbuilding & Dry Dock Co., Newport News, Va. She has already been fitted with 10 new boilers and two new smokestacks and is being given a very thorough overhauling.

The new steamer *Machigonne*, which was recently completed by the Neafie & Levy Co., Philadelphia, for the Harpswell Steamboat Co., has left for Portland, Me., to enter upon her service between Portland and Casco Bay. She has accommodations for about 500 passengers.

The third tug built to the order of



VALVE DIAGRAM OF DERELICT DESTROYER.

of San Francisco has given shipbuilding at that port a serious setback. The Union Iron Works has made application to the government to have the two war vessels *California* and *South Dakota* completed at Mare Island.

The largest floating dry dock ever built on Staten Island was launched on May 14 by Harry Crossey at Totterville. The dock was built to the order of Tietjen & Lang and is capable of accommodating vessels up to 6,000 tons. It will be operated at Hoboken.

Three of the older vessels of the navy have been condemned and are

ly of Toledo, O., has asked the trustees of the city of San Pedro, Cal., for a franchise to erect a floating dock at East San Pedro to which it is purposed to add other large improvements, including warehouses and a dry dock.

The large side wheel steamer *Saratoga*, of the Citizens line, which sank in the Hudson river some time ago, has been sent to Newport News to undergo a general overhauling. She is to be employed in the service between Norfolk, Newport News and Jamestown.

The repairs on the American liner *St. Paul* are being made in record time

the quartermaster's department by the Pusey & Jones Co., Wilmington, Del., was launched recently. The new vessel is named *Capt. Charles W. Rowell* and is 86 ft. long, 20 ft. wide, and 10 ft. deep. The tug is for service in the vicinity of New London, Conn.

It is expected that the new freight steamer *Old Colony*, which is one of three contracted for by the New England Navigation Co., with the Quintard Iron Works, and for which the hull is being built by Cramp's, Philadelphia, will be ready for launching soon. This vessel is to be fitted with turbine engines.

The steamer *Schoodic* building at

the yard of the Portland Ship Building Co., Portland, Me., for the Winter Harbor Co., was launched recently. She is 90 ft. over all, 20 ft. beam and 8 ft. deep and is to be operated between Winter Harbor and Bar Harbor. The machinery will be installed by the Portland company.

The largest schooner in the world is to be built by Percy & Small, Bath, Me., for J. S. Winslow & Co., Boston, Mass. She is to be 320 ft. on the keel. The framing was cut on the Pamunkey river and has been loaded onto two schooners at West Point, Va., for transportation to the ship yard.

The Pennsylvania Railroad Co. has let a contract for two large grain barges to J. H. Mathis & Co., Camden, N. J. Smith & Robinson, naval architects, will have charge of the work. The barges are to be of oak, 150 ft. long, 25 ft. beam and 13 ft. draught. They will have a capacity of 30,000 bushels each.

The Merchants' & Miners' steamer *Itasca*, after having her triple-expansion engines almost entirely rebuilt by the Maryland Steel Co., Sparrows Point, Md., has been docked at the yard of the Skinner Ship Building & Dry Dock Co., Baltimore, where she will be given a new tail-end shaft, stern bearing and propeller.

The turbine steamer *Camden*, building by the Bath Iron Works, Bath, Me., for the Eastern Steamship Co. is almost completed and ready for commission. This is the second turbine steamer to be operated by the Eastern Steamship Co., and her construction has been accomplished in remarkably good time.

In the construction of the new naval collier *Prometheus*, which is to be built at the Mare Island navy yard, San Francisco, the mechanics will indulge in a bit of good-natured rivalry with their Brooklyn fellow artisans who are constructing the collier *Vestal*. A record job would mean much for the future of Mare Island.

J. V. Paterson, manager of the Moran Co., Seattle, has announced that hereafter the company's plant will be strictly non-union. Sixty of the machinists in the shipyard went on a sympathetic strike, although Mr. Paterson declared that they were receiving more than the union scale. This led to the decision to declare the plant non-union.

The four submarine boats of the Holland type, which are building by the Electric Boat Co., for the government at the yard of the Fore River Ship Building Co., Quincy, Mass., are nearing completion and will soon be

subjected to their trials in Narragansett bay, which will be conducted by the naval board of inspection and survey.

The Portland Steel Shipbuilding Co. proposes to remove its plant from St. Johns, a suburb of Portland, Ore., to Seattle, Wash., and with this purpose in view has acquired a tract of land at Richmond Beach, near Seattle. The property consists of 10 acres of land with a water frontage. It is expected that the plant will be ready for operation within two months.

The cutting in two of the Merchants' & Miners' freight and passenger steamer *Juniata* will begin next month. The vessel is to be lengthened 46 ft. and will also have new boilers installed, the alterations involving an expenditure of \$100,000. The work will be done at the yard of the Newport News Shipbuilding & Dry Dock Co., Newport News, Va.

There were launched recently at the yard of Alexander Miller & Bro., Newburgh, N. Y., the hulls for two new fire boats for the city of New York. These vessels embody something new in the way of fire boat construction in that they are to be fitted with turbine engines. They are to be named *Thomas Willett* and *James Duane*, after two former mayors of the city of New York.

The steamer *J. N. Teal*, built by the Supply Ship Yard, Portland, Ore., for the Open River Transportation Co., was launched May 11. She is designed for operation between Portland and State Portage Road. Her launching marks the beginning of an effort to open to navigation the Willamette, Columbia and Snake rivers as far as Lewiston, Idaho, a distance of over 300 miles.

The quartermaster general of the army is soon to ask for bids for the construction of some 25 or 30 new boats for planting harbor defense mines and other services of the coast artillery. The plans for these new boats call for some improvements over the existing type for this service. Some of the boats will be electrically driven and are to be charged from the electric plants at the coast artillery forts.

The steamer *River Queen*, which was recently purchased from the Independent Steamboat & Barge Co., Washington, D. C., by a company of Norfolk and Washington men, has undergone a considerable amount of repair to her hull at Baltimore, and will resume her service on the Potomac shortly. The *River Queen* was used by President Lincoln to travel

between Washington and points on the bay, during the civil war.

Comdr. Peary's Arctic steamer *Roosevelt* has been sent to the yard of the Shooter's Island Shipbuilding Co., New York, to undergo alterations. Two Scotch boilers have been fitted, and the forecastle is to be carried further aft for the purpose of accommodating an additional number of Esquimaux. Some other alterations, which have been decided upon as the result of experiences on the Arctic trip, are also to be made.

The British steamship *Barnstable*, which was recently in collision with the schooner *Singleton Palmer*, of Boston, returned to Baltimore with a large hole in her side and will be repaired by the Skinner Ship Building & Dry Dock Co. of that city, at a cost of \$7,625. The *Barnstable* had only just completed repairs sustained in a collision with the steamer *Old Point Comfort*, near the Capes, in April.

W. & A. Fletcher Co., Hoboken, N. J., have been awarded a contract for a new steel steamboat for the Citizens line to Troy. The Fletcher company will build the machinery only, having let the contract for the building of the hull to the T. S. Marvel Co., Newburgh, N. Y., and the joiner work to John Englis & Son, Greenpoint. This steamer is to be the largest ever built for Hudson river service.

Christened with roses by the young daughter of the owner, William F. Palmer, of Boston, the five masted schooner *Fannie Palmer* was launched today from the yard of Percy & Small. She is intended for the general coastwise trade and will be ready for sea on Monday. The schooner cost \$117,000 and her measurements are: Length, 263.7 ft., beam, 45 ft., depth, 21.3 ft., tonnage, 2,233. Her carrying capacity is 3,700 tons.

The new submarine boat *Cuttlefish*, which was recently completed by the Fore River Shipbuilding Co., Quincy, Mass., for the Electric Boat Co., New York, was subjected to a submergence test recently off Boston harbor. A depth of 200 ft. was reached without damage or strain of any kind. The *Cuttlefish* is of the same type as the *Octopus*, which has just undergone such satisfactory government trials at Newport.

The Sharptown Marine Railway Co. has recently completed the four-masted schooner *Albert W. Robinson*. She is built for the southern coastwise trade requirements for lumber, rock, etc., and has been given careful attention with regard to strength. The ves-

sel is 178 ft. long over all, 34 ft. 7 in. beam and 12 ft. depth of hold, with a gross tonnage of 498 tons. She has an auxiliary engine which can be used for hoisting sails and cargo, working pumps and raising anchor.

The repairs to the Pacific Mail steamship Manchuria have been delayed by a strike of the employes at the Union Iron Works, San Francisco. The repairs would have been completed in 15 days and the steamer again put in service. Unless some arrangement is made, the insurance people who are paying for the repairs on the Manchuria will be under heavy expense for each day that the steamer remains in dry dock. The repairs constitute one of the largest jobs on record.

The contract for a new 379-ft. steel steamship for the Clyde line has been awarded to the Cramps. No details regarding the vessel have been given out, but it is known that it will be the largest of the Clyde boats and will be a freight carrier. Up to the time when the Morse syndicate took over the Clyde line all of its new steamers were built by Cramps, but since then two new vessels, the Delaware and the Pawnee, have been constructed by the Harlan & Hollingsworth Co., of Wilmington, Del.

A new steam lighter for S. B. Greacen has been launched at Rodermond's yard, Tompkins Cove, N. Y. The vessel is 115 ft. over all, 30 ft. beam, and 9 ft. depth of hold. Her engine was designed by her owner and is being constructed by Schantz & Eckert, Perth Amboy, N. J.; it is to have 13 and 31 in. cylinder diameters by 21 in. stroke. The boiler is of the vertical type and is 6 ft. 10 in. in diameter by 15 ft. high and is being built by the Kingsford Foundry & Machine Works, Oswego, N. Y.

The Neafie & Levy Ship & Engine Building Co., Philadelphia, recently launched the large ocean-going tug Gwalia for the Baltimore & Boston Barge Co. Her dimensions are as follows: Length 150 ft., beam 27 ft. 6 in., depth 16 ft. 10 in., draught, loaded, 17 ft. Her engine cylinders will be 16½, 24 and 40 in. diameter by 30 in. stroke. Steam will be supplied by two Scotch boilers, each 11 ft. 6 in. by 11 ft., allowed 175 lbs. steam pressure. She will have one 11 ft. 6 in. propeller wheel, with 12 ft. 3 in. pitch.

The opening of the second bids for the construction of the ocean-going tug for Neah Bay, Washington, reveal the fact that Pusey & Jones, Wilmington, Del., are the lowest bidders, and as their bid comes within the appropriation, it is likely that the tug will

be constructed at their yard. No Pacific coast ship yard came within the appropriation when the former bids were opened. The tug is for revenue service and if built on the Atlantic coast will be obliged to make the trip to the Pacific for delivery.

Pusey & Jones, Wilmington, Del., are installing the machinery in the revenue cutter Androscoggin.

The United States revenue cutter Hudson was recently extensively repaired at the yard of the Brown Dry Dock Co., Jersey City, N. J.

The Old Dominion liner Hamilton is having her engines and boilers given a general overhauling by the Quintard Iron Works, New York.

The Fire Island lightship No. 68 is undergoing an overhauling at the Brooklyn navy yard. A relief ship is on her station during her enforced absence.

McIntyre & Henderson, Baltimore, Md., recently began the construction of a 105-ft. sea-going tug for stock. The tug will have a fore-and-aft compound engine and a Scotch boiler.

The Scully Towing & Transportation Co., New York, has recently purchased the ship F. I. Chapman and she has been sent to the yard of the Brooklyn Warehouse & Dry Dock Co., foot of Twenty-sixth street, Brooklyn, N. Y., where she is to be converted into a barge. The same owners recently converted the bark Francis S. Hampshire into a barge.

A. C. Brown, Tottenville, N. Y., has nearly completed the tug building to the order of Robert Rogers, and she will be named Thomas W. Rogers, after the owner's brother. The tug is 65 ft. long. Her engine, which is to be supplied by Schantz & Eckert, Perth Amboy, N. J., is 17 x 20 in., and steam will be supplied by a Kingsford boiler, allowed a pressure of 150 lbs.

The new steamers Yale and Harvard, recently built for the Metropolitan Steamship Co., New York, are to be fitted with bronze propeller wheels made by the Fox Hill Foundry, Hoboken, N. J. The Yale was recently dry docked at the yard of Tietjen & Lang, Hoboken, to have her wheels put on and the Harvard is to follow soon.

The army tug Capt. A. M. Wethergill was launched recently at the yard of the T. S. Marvel Shipbuilding Co., Newburgh, N. Y. The Wethergill is 86 ft. over all, 20 ft. beam, and 10 ft. deep. She is to be equipped with two engines, size 7½ in. and 15 in. cylinder diameters by 11½ ft. long, and one boiler, built by P. Delany & Co., Newburgh, N. Y., size 10½ ft. diameter by 11½ ft. long. The boat

is to be used in connection with the U. S. quartermaster's department, and also for the purpose of laying mines in harbors.

All the prominent ship builders on the Atlantic coast are in receipt of communications from the revenue cutter service asking if it be possible by omitting some of the smaller details of the equipment of the new derelict destroyer and substituting designs of engines which can be supplied at a lower cost than those which it was at first designed to use, and this without impairing in any way the efficiency of the vessel, that they submit bids coming within the appropriation of \$250,000 available for her construction. The department is of the opinion that an additional appropriation can be secured later to provide for the equipment thus omitted.

The steamer Governor, building for the Pacific Steamship Co., San Francisco, by the New York Ship Building Co., Camden, N. J., was launched May 25. This vessel is for use on the San Francisco and Puget Sound route and is 391 ft. long, 48 ft. in breadth and 19.7 ft. deep, being of the same dimensions as the new steamer President which recently made the trip to the Pacific coast, after her completion, and which is owned by the same company. The Governor is equipped with twin screws and two smoke stacks, thus differing in appearance from her sister ship although possessing no more actual power. The Governor will sail on her long voyage to the Pacific on July 10.

RECEPTION ON LA VELOCE.

A dinner and inspection took place on board the new steamship Europa of La Veloce steamship line to celebrate the arrival in the port of New York of this, the latest and largest Italian trans-Atlantic liner. Alexander Bolognesi, head of the firm of Bolognesi, Hartfield & Co., agents for the line, presided, and addresses were delivered by several American and Italian friends of the company. The Europa is 450 ft. long, and 55 ft. wide, with a gross tonnage of 7,000, displacement of 10,400 tons, and an average speed of 17 knots an hour.

Capt. R. H. Hathaway who was in command of the steamship Mongolia when she went aground near Japan a few weeks ago has been entirely exonerated by the steamboat inspection service. It was shown that the vessel was at the time in complete charge of the pilot.

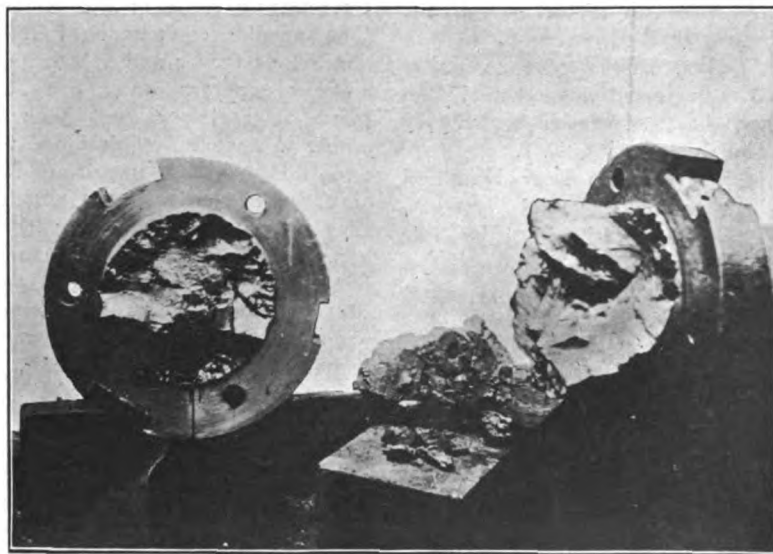
AN INTERESTING REPAIR JOB AT SEA.

We have been favored by D. W. Bavaird, the secretary of the Glasgow Branch of the Marine Engineers' Association, through our British representative, with the two interesting

tugs sent out to assist made their appearance. The whole repair was managed in 48 hours' time. Three holes, $1\frac{3}{8}$ in. diameter, were drilled through the adjoining collars, and recesses were cut in one of the collars for receiving the heads of the bolts,

repairs were completed the Hestia then steamed to Greenock en route for Glasgow, a distance of 367 miles, which she accomplished in 47 hours 20 minutes. Although she was accompanied by two tugs, which had been sent out to her assistance, the vessel was self-propelled all the way. Proceeding up the Clyde, the engines were operated to send the vessel ahead and astern even more than usual, and this, together with the movements in docking, certainly afforded striking testimony to the efficiency of the repairs to the shaft. The underwriters have made some recognition of the skillful way in which this repair was accomplished under most trying conditions to the vessel brought safely into port under her own steam.

From one of the photographs of the shaft taken after removal from the ship, it will be observed that the internal stuffing is anything but what may be termed a homogeneous mass; the wonder is that the shaft ran so long—about 15 years.



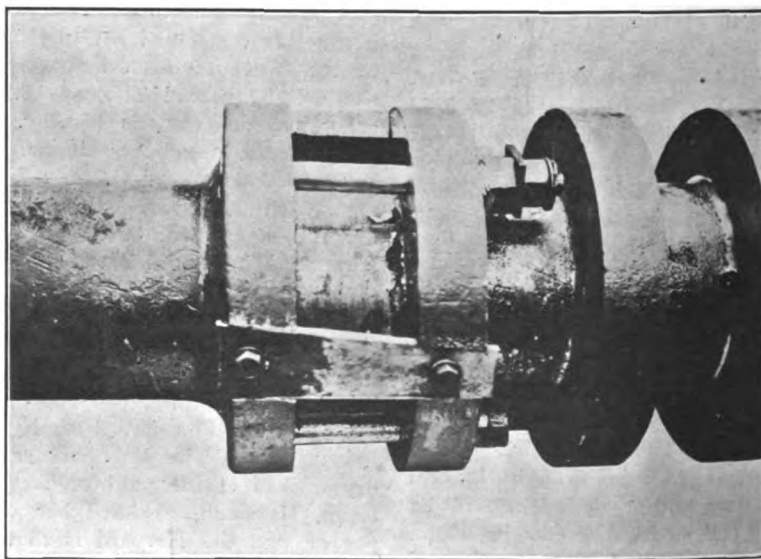
BROKEN SHAFT OF THE STEAMER HESTIA, OF THE DONALDSON LINE.

photographs showing how a broken shaft at sea was repaired. This interesting repair job took place about the middle of January last on board the screw steamer Hestia, of the Donaldson line, which broke her thrust shaft while on a voyage from Glasgow to Newport News. The vessel is of 3,790 tons gross, and 2,434 tons net, and was some two days out when the breakage took place. A severe gale was raging at the time, and during the five days thereafter, she drifted some 256 miles.

The Hestia's thrust shaft was 21 ft. long, $13\frac{1}{4}$ in. diameter in the body, with collars $22\frac{1}{2}$ in. diameter, and $3\frac{3}{4}$ in. thick. The shaft was completely broken. When the chief engineer, Angus A. Urquhart, had determined to effect a repair, even in the adverse circumstances, he availed himself of the assistance of the mates of the ship to try and stop the tail shaft and propeller from revolving with the vicious lashing of the sea. When all seemed secure enough by means of the wire rope lashings they adopted to effect this, these were torn asunder as if they had been spun yarn. The chief engineer then got the ship's carpenter to fill up the spare eccentric strap with wood and cut a circle to fit a coupling which he fitted as a brake. This device proved effective, and the repair was proceeded with and completed, and the ship was ready to resume on her own before

so as to clear the thrust web. After fitting the three $1\frac{3}{8}$ -in. bolts through the collars, three keys were also fitted on the edges of the collars as shown in the illustration. Two of these were 14 in. long by 5 in. by $1\frac{3}{8}$ in., and

Mr. G. Edward Smith, of the firm of Smith & Robinson, engineers and naval architects, Provident building, Philadelphia, has been appointed surveyor of the British Corporation Registry for the port and district of Philadelphia. Two small steamers are



AFTER THE SHAFT WAS REPAIRED THE HESTIA STEAMED 390 MILES IN 56 HOURS.

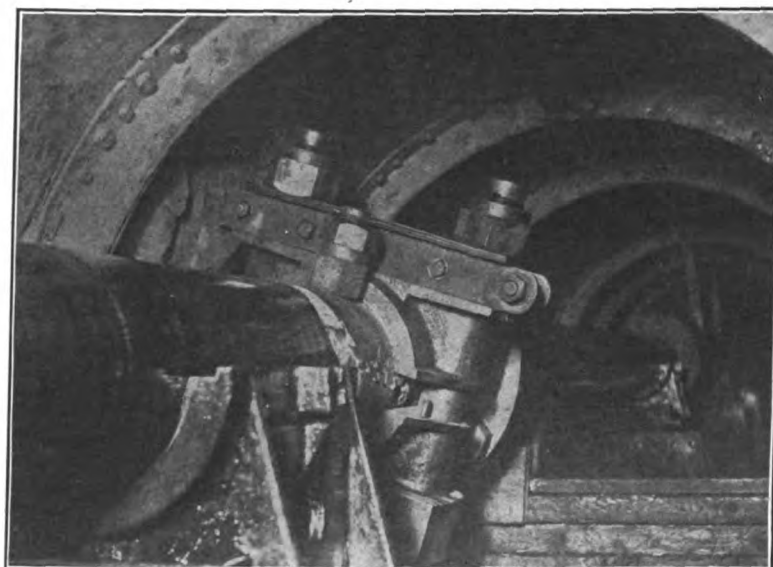
one—made from the shank of a $3\frac{1}{4}$ -in. spanner was 14 in. by $\frac{5}{8}$ in. thick. Drilling the holes and cutting one of the key seats was accomplished under very trying circumstances, and absorbed a good deal of the 48 hours taken by the whole work. When the

about to be built under the Corporation rules at the Pusey & Jones Co.'s yard at Wilmington, for the South American trade. Smith & Robinson have built up considerable business in damage surveys and settlements for owners and underwriters.

MADURA'S BROKEN SHAFT.

The following particulars show how interesting repairs were effected to the S. S. Madura which sustained a broken shaft while on a voyage from Durban to Bunbury, West Australia. When the Madura was about 1,700 miles from Bunbury, the engines started racing. On examination, after being stopped, it was found that the second length of shafting from thrust shaft had broken near the after coupling. Efforts were immediately commenced to repair same in the following manner as described by Chief Engineer Gilbert Stewart: The engine was of the triple-expansion type. We fixed turning gear, and then proceeded to disconnect the intermediate engine for the purpose of getting the bottom end brasses. Having removed slide valve, and made all secure on the intermediate engine, we proceeded to fit bottom end brasses to broken shaft. The crank pin being a little larger than the main shafting, we had to bed the brasses by chipping away $\frac{1}{4}$ in. of the white metal. It was then found necessary to make a keep strong enough to suit the length of bolts binding brasses. For this purpose we used traveling crane for cylinder tops, cutting into the required length and fastening together by four $\frac{7}{8}$ -in. bolts with ferrules between. The flawed part of the shaft was dressed

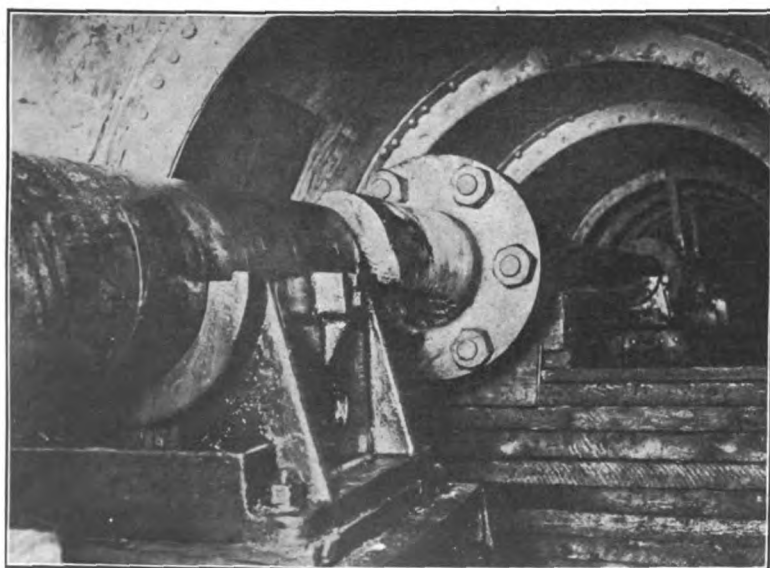
in the opening of break to keep it rigid. The engine was then ready for starting and we commenced our journey, but found it necessary to stop several times to lighten up the bottom end bolts. We were able to travel five knots per hour, thus



MADURA'S BROKEN SHAFT—NOW REPAIRED.

reaching Fremantle in safety. The time taken to complete repairs was seven days, and our illustrations show broken shaft and the same temporarily repaired as above described.

Forty-one plates are to come off the steamer Saxon as a result of her strand-



BROKEN SHAFT OF STEAMER MADURA.

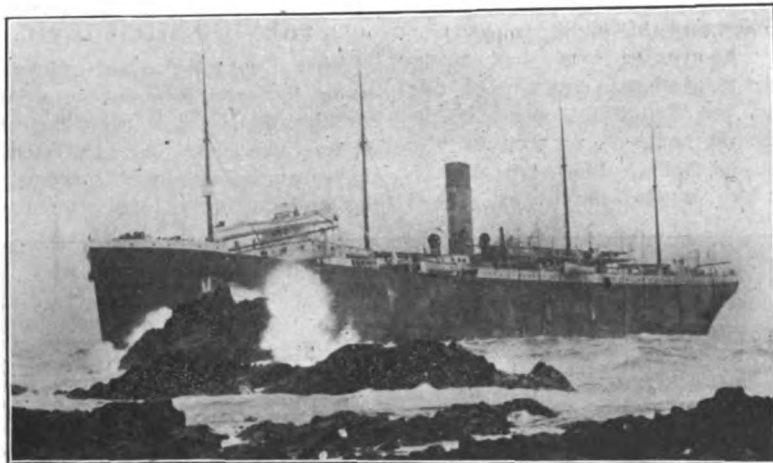
and brasses fixed in place. At the forward end of break a $1\frac{3}{4}$ -in. hole was bored through shaft and then finished to $2\frac{3}{4}$ in. with bar and cutter. A cross-head bolt was then driven in, and after everything was tightened up we poured white metal

ing on Caribou island. The damage is principally under No. 1 tank. The fore foot and stem were not damaged. In fact, the total damage is less than expected, considering the fact that she went on the rock full speed loaded.

SALVING THE SUEVIC.

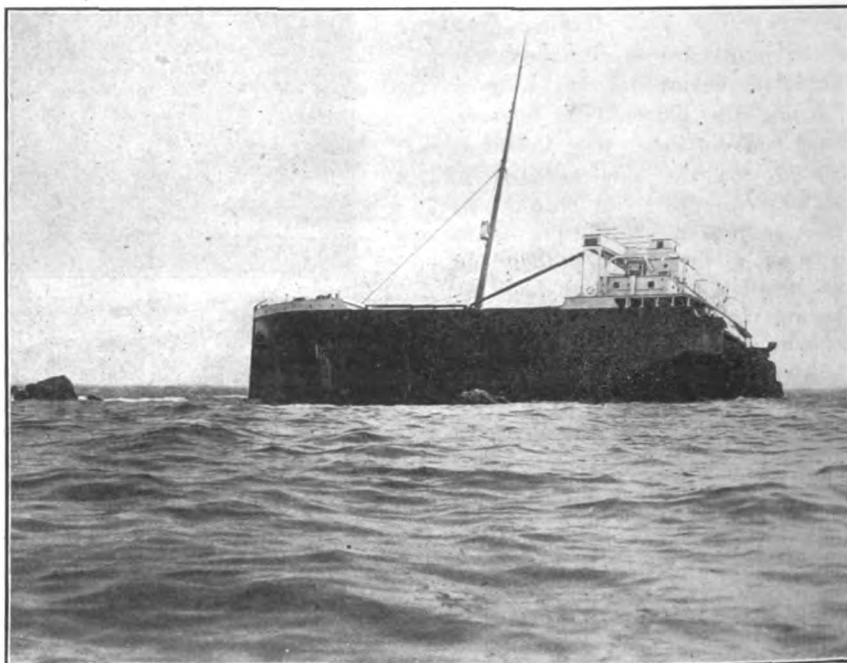
What Capt. McLellan, of the Liverpool Salvage Association, describes as "the biggest job ever performed" is here described and illustrated, and there can be no doubt that the salvaging and towing of the after part of

the huge White Star liner is one of the most brilliant pieces of salvage work ever accomplished. The Suevic is a vessel of 12,500 tons employed in the Liverpool, London and Australian trade, and was homeward bound when she met with disaster in the neighborhood of the Lizard on March 17 last. In a dense fog she ran on the Stag rock whilst steaming at about 13 knots, and all efforts to get her off proved futile. All her passengers were safely got off, and favorable weather prevailing subsequently, a great portion of her valuable cargo was discharged into lighters and coasters, but still the rock which had pierced her bottom held her fast. The wreck officer of the Liverpool Salvage Association, Capt. McLellan, ultimately decided that the only means of saving that portion of the ship which was buoyant was to cut her in two, and efforts in this direction were at once commenced, as it was found that the after part, containing her engines, was practically undamaged, owing to the watertight bulkheads having been closed. The cutting of the vessel in two was performed under great difficulties, as owing to the Suevic having to be divided through at No. 3 hatch which is a refrigerated hold, and at the time was full of frozen meat, the divers had to operate from outside. There was a strong spring tide ran under

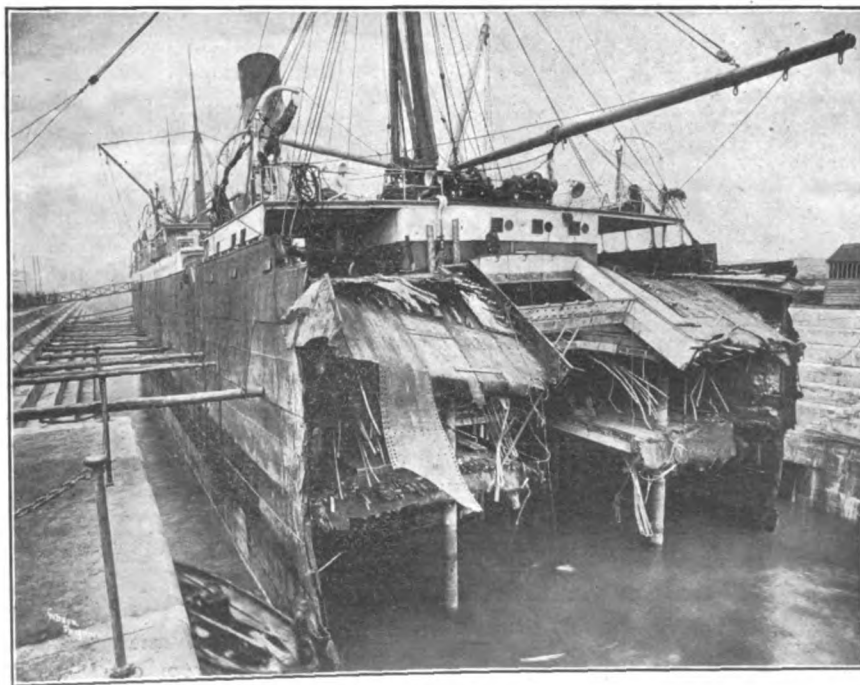


THE SUEVIC ON THE ROCKS BEFORE SHE WAS BLOWN APART.

the ship's bottom; and the men working at a depth of 40 ft. were actually standing on two other wrecks. Dynamite was used in the severing operations, and as holes were blasted in the side of the vessel, carcasses of mutton were set awash, and the divers had to evade them as best they could. Frequently they were knocked over by these floating carcasses or washed off their feet, but nevertheless they stuck to their task with courage nothing short of heroism. After 10 days' operation and in the early hours on Tuesday morning, April 2, the big vessel was divided. On the previous evening practically only the main steel deck remained to be separated, and this was accomplished without human effort through the vessel rising and falling buoyantly in the long Atlantic swell. The length of the ship that has been salvaged is about 370 ft., leaving about 184 ft. still on the rocks. Thus, two-



THE ABANDONED BOW OF THE SUEVIC.



THE SUEVIC IN DRY DOCK.

thirds of the Suevic, containing the valuable machinery and boilers which are undamaged, and the costly fittings of her staterooms have been saved from what appeared at one time certain destruction by the smart and persistent efforts of Wreck Officer McLellan and those who acted with him. It should be stated, however, that they were favored with good weather, for had it been otherwise the ship would inevitably have been broken to pieces on these dangerous rocks. Report says of this piece of dangerous coast that it has never been known before for a vessel to be cleared from their grasp. Enormous quantities of dynamite were

used for the cutting operations. The towing of the salvaged portion to Southampton, a distance of 170 miles, was then decided upon and this was safely accomplished under the Suevic's own steam and with the assistance of three tugs. She floated on an even keel and made no water aft. She was safely moored alongside the River Test quay at Southampton on Thursday, April 4, and a sorry spectacle she presented as she lay alongside the quay. The severed deck plating was curled and torn. The hatchways were in an almost perpendicular position, and only the stout iron columns that support the decks stood upright. All these distorted members bore evidence of the tremendous force of the explosions that had been necessary to blow the ship apart at the No. 3 hold. The forepart containing No. 1, 2 and portion of No. 3 holds, held various cargo which has been lost with the exception of

some \$10,000 value salvaged. A great proportion of the lost cargo consisted of food supplies, which, through exposure, etc., had been rendered valueless. The after part saved contained about 1,500 tons of cargo, which, together with the value of the hull will represent a clear save for the underwriters of about half a million dollars.

It is said that the salvage has cost \$250,000, but this is but a rough estimate. The steamer is uninsured, but her value before going ashore is understood to have been about \$750,000. A new forward part to be subsequently built into the Suevic is at present being constructed by Messrs. Harland & Wolff, and in due time the Suevic will doubtless be brought round to Belfast for this to be accomplished. It is not, of course, the first time a vessel has been cut in two while on the rocks, and half saved from total loss. This was done in the case of the Elder-Dempster liner Milwaukee which ran ashore on the coast of Aberdeen, and had a new forepart built into her, and this ship is still engaged in trade. Another instance more recent still is that of the Nelson liner Highland Fling, 4,088 tons, which went ashore on the Cornish coast last January, was severed by explosives, and successfully floated. Both these cases were in the hands of the Liverpool Salvage Association and London Salvage Association respectively.

FASTEST VESSEL IN THE BRITISH NAVY.

The torpedo boat destroyer Afridi, which, together with her sister ship Shurka, will constitute the fastest class of vessel in the British navy, and is here

destroyer, and her length between perpendiculars is 250 ft.; breadth, molded, 25 ft.; depth, molded, 15 ft. 6 in., and her mean draught, 7 ft. 1 in. The ship will carry three 12-pounder quick-firing guns, two of which will be mounted on the forecastle deck, and one on the upper deck aft. She will also be fitted with two 18-in. torpedo tubes, which will be mounted on the upper deck. The machinery will be supplied by the Parsons Marine Steam Turbine Co., Ltd., of Wallsend-on-Tyne. It will consist of a set of compound turbines which will drive three propeller shafts, each fitted with one propeller. The boilers will be of the Zarrow type, and will develop approximately 14,500 H. P. It is interesting to note that the Admiralty have decided to use oil instead of coal in these ships. Both the Afridi and Shurka have been designed for a speed of 33 knots.

MARINE ENGINEERS BENEFICIAL ASSOCIATION NO. 33.

A banquet to commemorate the consolidation of the New York branches of the association to form M. E. B. A. No. 33, was held in the Everett House, Union Square, New York, on the evening of May 7. The banquet hall was arranged to accommodate the splendid muster of members and guests, amongst the latter being several persons prominent in New York shipping circles.

Full justice was done to the excellent fare provided, Mr. Flannery, proprietor of the Everett House and a member of No. 33, surpassed himself on this occasion. After the banquet an exceedingly good program of entertainments was discussed, President Givnan, of M. E. B. A., 33, being in the chair.

During the evening a magnificent

pected token of their good will and esteem.

NOTES FROM NEPTUNE.

About 32,000 tons of trans-Atlantic freight leave the port of New York each day.

The first storm signal was issued in 1861. In August of that year the publication of weather forecasts was first begun.

There are at present 250,000 miles of cable in all at the bottom of the sea, representing \$250,000,000. Each line cost about \$1,000 per mile to make and lay.

The weather is called calm if the air is not moving at more than three miles an hour; 34 miles is a strong breeze; 40 a gale; 75 a storm, and 90 a hurricane.

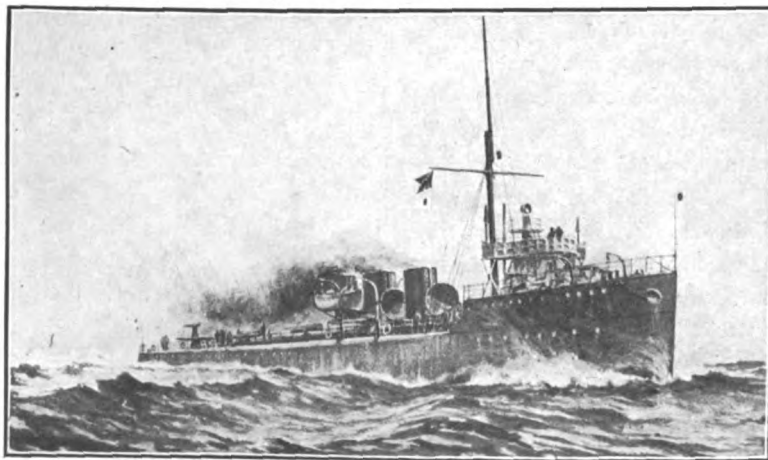
Officials of the New York Custom House promise the highest annual record of receipts for the current fiscal year that has ever been known at this port. The figures will be little under \$800,000 for each business day.

In opposing the christening of a battleship with wine, a splendid chance of drawing a temperance lesson from the incident is lost. After the first taste of wine the ship takes to the water—and sticks to it ever afterwards.

Speaking of the marvelous progress in ship building at the annual congress of the Iron and Steel Institute, London, Sir Hugh Bell, president, prophesied that a hundred years hence ships will be propelled by "wireless" power. The electric force is to be generated at Niagara and transmitted over the Atlantic.

Women at work in the United States is the subject of a report issued today by the Census Bureau based on the returns in 1900. The returns showed, among other things, that five females were employed as pilots, six were ship carpenters, 185 blacksmiths, 508 machinists, eight boilermakers, and two "motormen."

A fall of the barometer does not necessarily mean rain. The barometer falls for wind and warm weather as well as rain. If the barometer falls as much as one-tenth in an hour, or two-tenths in four hours, it is a sure sign of a storm coming. In the Northern Hemisphere the barometer falls with S. E., S., and S. W. winds. At W. it begins to rise. Glycerine can be used instead of mercury in a barometer, but the column of glycerine must be 27 ft. long to do the same work as 30 in. of mercury.



TORPEDO BOAT DESTROYER AFRIDI.

illustrated, was launched from the Elswick ship yard of Sir W. S. Armstrong, Whitworth & Co., Ltd., on May 8. The Afridi is an ocean-going torpedo boat

loving cup, suitably engraved, was presented to National President William F. Yates, who in a few fitting words thanked the members for the unex-



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SAULT STE. MARIE CANAL.

In point of commerce the Sault Ste. Marie canal is the greatest artificial waterway in the world. During the few months in which it is possible for it to be open, over 50,000,000 tons of freight passes through it. It is quite probable that during the present year over 60,000,000 tons will pass through it. Anything, therefore, affecting this canal is of much interest to the entire country. Attention has been directed to it during the past week, owing to the fluctuations of water obtaining there. The stages of water have been very low this year, so that some of the steamers have scraped the sill in passing through the lock. This led the canal officials to limit the draught at first to 18 ft. 10 in., but it has now been increased to 19 ft. 4 in. The modern carrier on the great lakes will carry 100 tons of freight on one inch of water, so that a reduction in draught of from 5 to

6 inches means a sensible shrinkage in her cargo carrying capacity. However, the canal officials are very wise in safeguarding the locks from possible injury. The delay of even a day in the operation of the locks has become quite a serious matter. Years ago when the canal was a state affair the board of control once proposed to close it in August for three weeks for repairs. Such a condition today, however, would paralyze industry over 1,000 miles of territory.

OBSELETE CRAFT.

From time to time the British government disposes of a fleet of out-of-date warships by auction, the goods going to the highest bidder as in a common every-day auction. One of these periodical naval auctions occurred lately, several cruisers, gun and torpedo boats being knocked down at bargain prices. The valuation set on some of the larger ships by the bidders might cause the uninitiated to wonder, but when it is known that the ships cannot leave the British Isles, must be broken up within a stipulated time, and are only sold to reputable bidders, the outside world ceases to wonder why such ships, not twenty years afloat in several cases, are sold at scrap-heap prices.

It does not require a much larger crew to man the modern ship, and, at the rate the British government is building, the demand for men would greatly exceed the supply; hence the disposal of the obsolete craft.

Perhaps it is not a pity that the laws as to the disposal of these ships by the successful bidders are so stringent, as some of these third-rate powers would be equipping themselves with a navy at remnant-counter prices, and there is no knowing where such a matter would end. The sale of "obsolete" army rifles to the benighted heathen, by private parties, put the weapons into hands seemingly peculiarly adapted to doing considerable damage with the "gaspipe."

That the United States government, in disposing of their obsolete and otherwise useless material, have overlooked the scrap-heap in the Brooklyn navy yard, is now being brought to the attention of the public by the rumored resurrection of the first submarine boat built in this country. After fifty years of neg-

lect and gradual decay, the Intelligent Whale, sealed and painted, will be removed from the companionship of the surrounding junk and placed amongst the other interesting exhibits on the greensward of the navy yard.

The casual visitor to the navy yard may have noticed the discarded plunger, and being unaware of its sad history, never gave it a second thought. Such is fame.

After several years of postponements, the consent of the government was obtained by the inventor to make an official trial of his submarine, somewhere in the sixties. The boat was brought to the Brooklyn navy yard, where the test was to take place, but never had an official trial. On the morning previous to the arrival of the committee the inventor, Halstead, in a preliminary trial nearly lost his life. The boat was beached without any further experimenting, and there it has lain, an object of mild interest to this day.

FREIGHT SITUATION.

The ore fleet during May demonstrated magnificently its ability to cope with the increased movement necessary to be made during the present year if 42,000,000 tons are to be shipped—and this too in the face of numerous obstacles as the carriers have been bunched at both ends of the route during the month. Yet during May, 5,621,285 tons of ore were moved, a gain of 1,316,331 tons over May of last year, thus overcoming the serious handicap of the late start. Shipments to June 1 are 6,252,261 tons, a gain of 499,921 tons over the same period last year. Shipments by ports were as follows:

	May 1906.	May 1907.
Escanaba	680,490	722,516
Marquette	319,171	366,826
Ashland	497,760	479,924
Superior	657,924	994,504
Duluth	1,140,761	1,835,921
Two Harbors	1,008,838	1,221,594
	4,304,954	5,621,285
To June 1.	1906.	1907.
Escanaba	923,744	1,014,339
Marquette	404,397	376,873
Ashland	632,062	495,194
Superior	868,187	1,101,183
Duluth	1,524,404	1,937,830
Two Harbors	1,399,546	1,326,842
	5,752,340	6,252,261

It will be comparatively easy for the fleet to handle a movement of 6,000,000 tons and over during the summer months.

Coal is moving freely, but the rates are practically the same as they were at the opening of navigation, that is to say, 30 cents to the head of the lakes, 40 cents to Milwaukee and 35 cents to the smaller ports on Lake Michigan. Fifty cents has been paid on small cargoes to Milwaukee by one shipper, but the great bulk of the movement is at the old rates.

LAUNCHING SCOUT CRUISER BIRMINGHAM

The launching of the scout cruiser Birmingham at the yard of the Fore River Ship Building Co., Quincy, Mass., was an event of more than passing interest and was attended by a party of about thirty prominent citi-

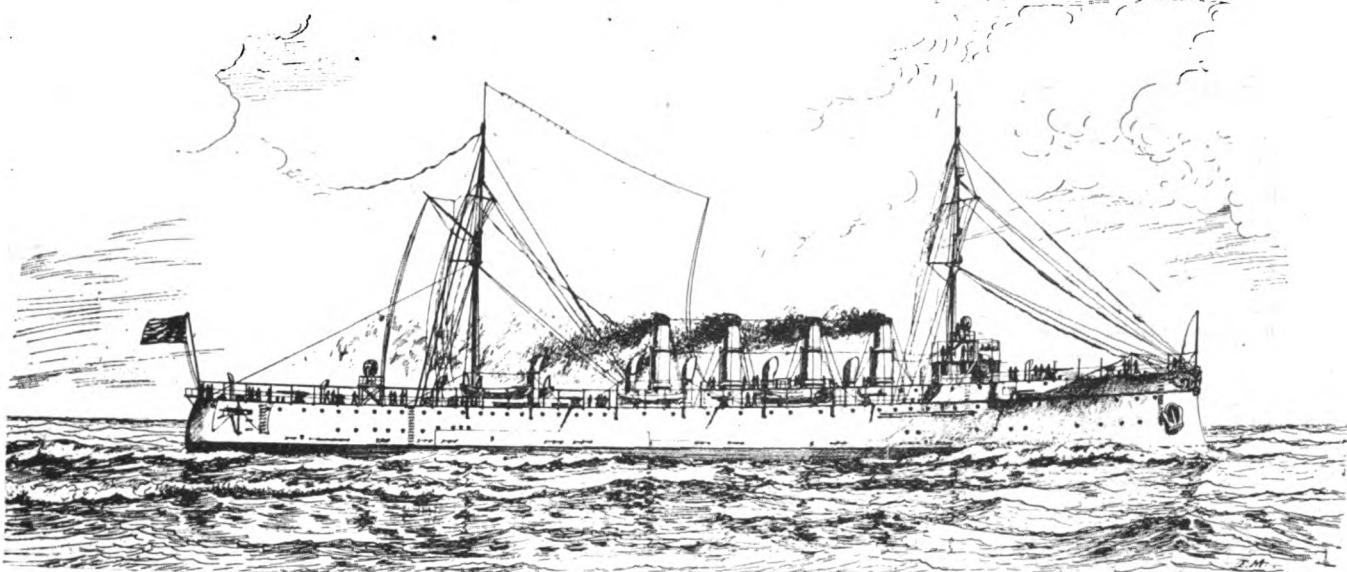
zens of Birmingham. The vessel have been given the most careful consideration.

The estimated speed, 24 knots, is greater than that of any other cruiser of the navy, and is exceeded only by that of the torpedo boats and de-

stroyers, and while it is slightly less than that of the English scouts now building, the difference in speed is more than compensated for by the ability to maintain the high speed in all conditions of weather, more than

for a vessel of the following characteristics:

Length between perpendiculars	420' 0"
Length over all	423' 2"
Breadth, molded	46' 8"
Draught, fully loaded..	19' 1½"



THE SCOUT CRUISER BIRMINGHAM AS SHE WILL LOOK WHEN COMPLETED.

zens of Birmingham. The vessel was christened by Miss Mary Campbell, daughter of Mr. and Mrs. E. K. Campbell, of Birmingham, Ala. The plans and specifications for the scout cruiser Birmingham, authorized by

act of congress of April 17, 1904, cover an entirely new type, as far as the United States navy is concerned, and the various features of the design

Depth, amidship, molded	36' 5 1-16"
Displacement, fully loaded	4,640 tons
Displacement on trial..	3,750 tons
Draught on trial.....	16' 9½"
Total coal capacity....	1,250 tons
Coal on trial.....	175 "
Feed water total.....	100 "
Feed water on trial....	50 "
Maximum speed, average of 4 hours' run..	24 knots
Steaming radius at 10 knots per hour, about	6,250 "
Steaming radius at full speed, about	1,875 "
Maximum indicated horsepower, M. engines, est.	16,000
Indicated horsepower, auxiliaries	400
Time allowed for completion	32 mos.

The freeboard of the vessel is greater than that of any other vessel in the navy, being, at the normal draught, 19 ft. 8½ in. amidships, 34 ft. at the stem, and 21 ft. 6 in. at the stern. The high freeboard insures good sea-going qualities, gives great range of stability and provides a safe and dry vessel under all conditions of weather. On account of the high freeboard it has been possible to provide commodious quarters for the officers and crew, well above the water line. A forecabin has been provided above the main deck, for about one-quarter of the length, and deck houses have been arranged abaft the forecabin.



THE LAUNCHING PARTY.

act of congress of April 17, 1904, cover an entirely new type, as far as the United States navy is concerned, and the various features of the design

twice the coal capacity of the English scouts, and, consequently, a greatly increased radius of action.

The plans as fully developed call

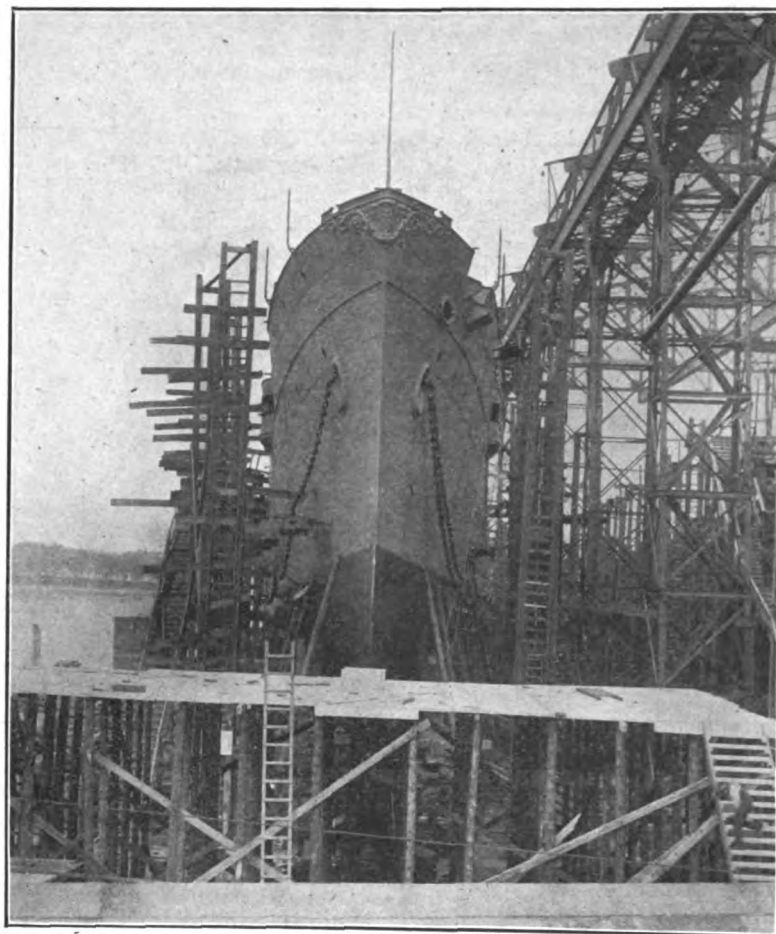
Ample subdivision has been made to insure the vessel keeping afloat with no resulting serious change of machinery spaces, forming large brackets gradually tapered off. Between these longitudinal bulkheads, and extending

Five decks, designated as forecastle, main, berth, orlop and platform, respectively, will be worked, the main and berth decks being continuous from stem to stern. Nickel steel protection of 80 lbs. per sq. ft. will be worked on the shell plating for the length of the machinery space including the dynamo room, extending from about 3 ft. 4 in. below the water line to about 9 ft. 6 in. above, abreast the engine and dynamo rooms and 6 ft. 6 in. above, abreast the boiler rooms. At the forward end of the machinery space and the after end of the dynamo room, partial athwartship bulkheads of 40 lbs. nickel steel will be fitted, of the same depth as the adjoining side protection. Nickel steel protection will also be fitted in wake of the steering engine.

The battery consists of two 5-in. and six 3-in. rapid-fire guns and two 21-in. submerged torpedo tubes.

Two submerged torpedo tubes of the side-loading type with all necessary accessories, including air compressors and accumulators, will be installed in the torpedo room forward, one on each side. Four torpedoes for each tube will be carried.

The magazines have been so arranged that about half the total supply of ammunition will be carried at each end of the vessel, and four ammunition hoists driven by constant speed electric motors will deliver ammunition to the guns. Battle order and range indicators will be fitted in accordance with the usual naval practice.



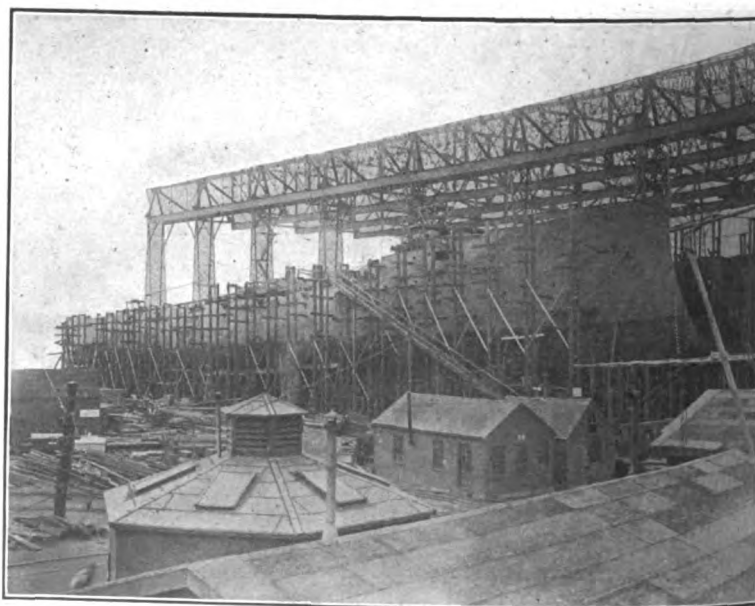
BOW VIEW OF SCOUT CRUISER BIRMINGHAM ON THE WAYS.

trim or loss of stability if several of the compartments are pierced.

In planning the structural details the greatest care has been exercised to provide a hull which shall combine with lightness the strength and stiffness necessary to successfully withstand the severe shocks which the vessel may be called upon to undergo, and particular attention has been paid to the longitudinal strength of the vessel and to the strength of the water-tight bulkheads, that they may be able to withstand the pressure due to the flooding of any compartment and thus avoid endangering the vessel as a whole.

The hull will be built of steel throughout. The longitudinal bulkheads will be worked continuous throughout the engine and boiler spaces, one on each side, extending from the bottom of the vessel to the main deck, and inclined slightly inboard at the top. In order to avoid any break in the continuity of the strength of the vessel the upper and lower strakes of these bulkheads will extend well beyond the limits of the

throughout the boiler and engine room, an inner bottom will be worked,



SCOUT CRUISER BIRMINGHAM ON THE STOCKS.

so that the vessel will be well protected from injury in case of grounding.

The engines will be of the vertical, twin-screw, four-cylinder, triple-expansion type, located in separate com-

partments, of a combined I. H. P. of 16,000, arranged for outboard turning propellers when going ahead. The steam pressure in the high-pressure receiver will be 250 lbs. The stroke of the engine will be 3 ft., and the cylinder diameters will be sufficient to give the required indicated horsepower at about 200 revolutions per minute. The necessary auxiliaries and accessories will be provided in accordance with the practice of the bureau of steam engineering.

There will be twelve water-tube boilers of the "Express" type, placed in three water-tight compartments, with a total grate surface of 630 sq. ft., and a total heating surface of 37,080 sq. ft. The working pressure will be 275 lbs. per sq. in. The steaming capacity will be such that all the steam machinery can be run at full power with an average air pressure in the firerooms of 5 in. of water. Four smoke pipes, each 75 ft. high above the base, will be fitted. An evaporating and distilling plant capable of evaporating and condensing 16,000 gallons of water per day will be installed, and a refrigerating plant of 2 tons capacity will also be fitted. The vessel will be steam heated throughout.

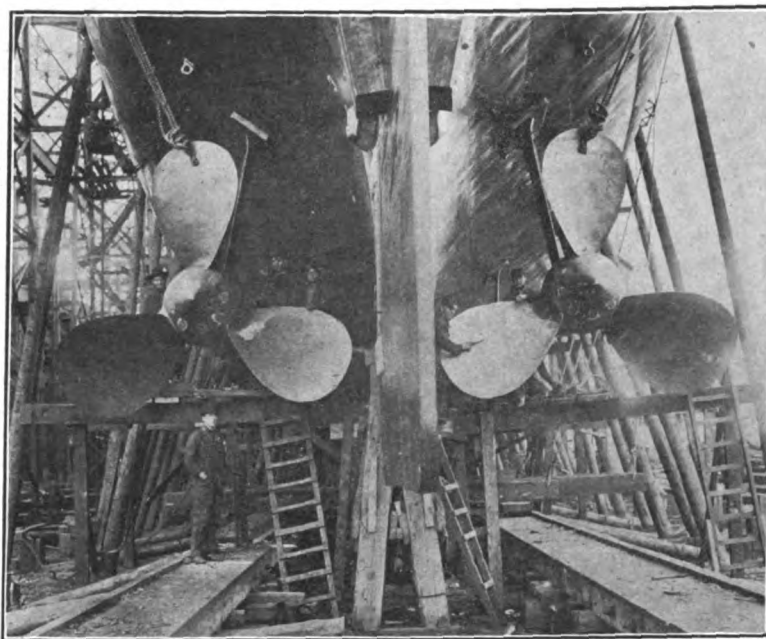
The vessel will be lighted throughout by electricity, about 600 incandescent lamps, 22 arc lamps and two 60-in. searchlights being contemplated. To supply the current for these lights and the various electric-driven auxiliaries about the ship, deck winches, ammunition hoists, ventilation sets, air compressors, etc., three 32-K. W.

board will be fitted with complete arrangements for handling and stowing the same.

The windlass will be of the vertical spindle type, with two wildcats and gypsy heads, and will be installed on the main deck forward.

castle deck will be of bronze. The chart house and the bridge above will be supplied with the usual steering stands, engine telegraphs and indicators.

The arrangement of the quarters provides accommodation for a com-



STERN VIEW OF SCOUT CRUISER BIRMINGHAM SHOWING PROPELLERS.

The steam steering gear will be of the usual navy type, with the steering engine located in a separate water-tight compartment aft, and with the usual steering stations in the chart house and on the bridge.

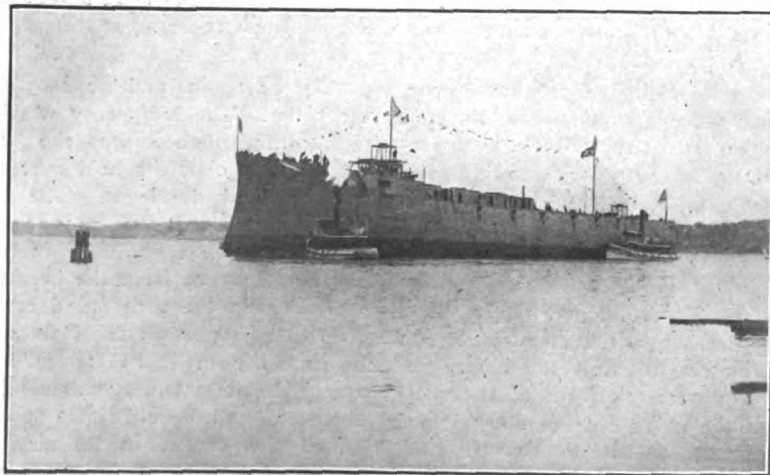
Two masts will be provided, the

manding officer, 12 wardroom officers, five warrant officers and 340 men. The quarters for the officers are located in the after portion of the vessel with the usual staterooms, messrooms, etc., as customary in the naval service. The amidship and forward portions of the vessel are given up to the crew, with the usual lavatories, dispensary, sick bay, etc. Quarters for the chief petty officers are provided on the orlop deck forward.

The houses on the main deck contain the galleys, bakery, breadroom, blacksmith shop and wireless telegraph room. A large workshop is provided on the berth deck between the engine hatches, and the firemen's washrooms are also located on the berth deck, between the uptake enclosures.

The following boats will be carried on the vessel and will be handled by davits; one 28-ft. steam cutter, one 33-ft. launch, two 30-ft. cutters, three 28-ft. cutters, one 30-ft. whale boat, one 30-ft. gig, and one 14-ft. dinghy.

William H. Harrison, secretary and treasurer of Webb's Academy and Home for Ship Builders, died on May 17. Gilbert P. Taylor, 123 West Eighty-fifth street, New York, was elected in his place.



SCOUT CRUISER BIRMINGHAM AFLOAT.

steam-driven generating sets, of 125 volts pressure at the terminals, will be installed in the dynamo room on the platform deck aft.

Two stockless anchors arranged to stow in the hawse pipes, and one navy type anchor stowed on a bill-

foremast being fitted for the installation of wireless telegraph. A room for the wireless telegraph instruments will be located on the main deck amidships.

The chart house and emergency cabin in the after end of the fore-

"IN THE MERCHANT SERVICE"

'Twas the longshoremen's strike, and the friends of the First of the Jamaican stepped gingerly along the sidewalk on West street, rounding the little groups of strikers at a wide radius. Though the strikers themselves were not at all what the friends had pictured them to be, still, how were they to know that those peaceful looking mortals were not wolves in sheeps' clothing? Even if there was a temporary suspension of hostilities, a striker might be desirous of keeping his hand in, and a half brick patting one on the back is—well—annoying.

Then, again, there were these villainous looking policemen hanging around the dock gates, glancing suspiciously at the passers by as they playfully toyed with their clubs.

Having run the gauntlet and gained the deck of the Jamaican, the friends breathed more freely. Well, they would have breathed more freely if there had been a trifle less coal dust in the atmosphere. A solitary dusky figure was darting back and forth along the deck, stopping at intervals to hang over the rail and shout at some equally dusky groups of figures shoveling and shouting in the coal barges alongside. The rattle of winches, slamming of coal buckets, and squealing of blocks added to the noise and bustle, and the First's friends, unused to this phase of seafaring life, shrank back as the glaring eyes of a maniac on deck were suddenly turned on them.

"Hello," croaked the grimy one, "so you got aboard all right." Heavens! could this be Johnson—poor old Johnsy—whose job they had envied as they sat in his cabin of an evening telling him what good times marine engineers had.

He opened the door of his room and they stepped in off the deck, not at all sorry to get away from the din and dust. A good look at the First verified his statement that they were working into all hours of the night. A long sleep wouldn't have done his swollen eyes any harm.

"Well," he said, after gulping down a glass of water to wash the coal dust from his throat to his interior, "we're getting along." "You see," he went on in explanation, "firemen and coal passers are good men at their own particular line of work, but at coaling a ship they can't come up to the regular coal heavers. The only thing I am scared of, is, that at the rate they are disabling one an-

other there won't be enough left to finish the job. Half an hour ago we fished one man, spluttering and cursing, from the dock. The last muster roll showed a few disabled, but none are under the barges as yet. To thoroughly appreciate the situation you had better take a cigar, come out on deck, and stand to windward of the dirt and dust where you can see all that is transpiring, incidentally thanking heaven for your job in the dry goods store."

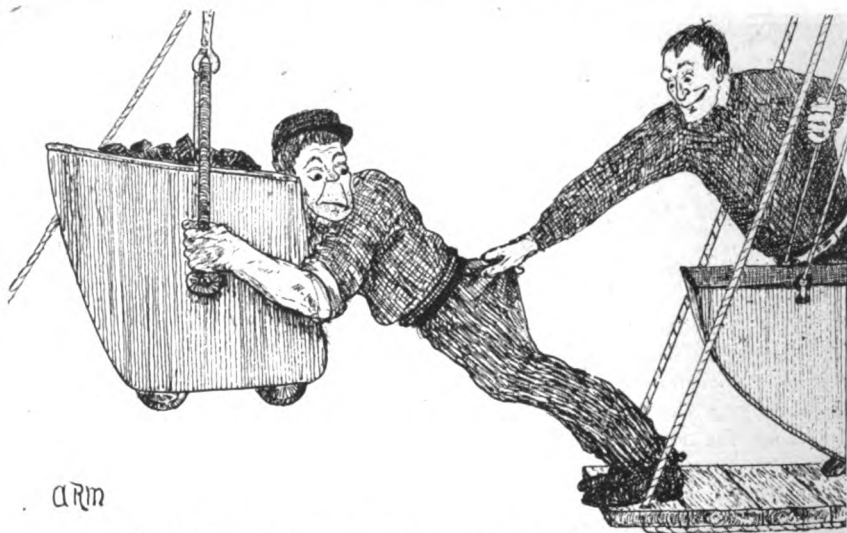
As they understand Johnson was too busy to spend much time in their company, they followed him out on the deck again.

Immediately beneath their position on the deck a gang of men had halted work; the winchman on the

jolt throwing half of the bucket's contents back on the barge, and nearly dislodging the "tilters." A wail of agony rose from the barge.

"Lower away, curse you!" roared the First, and the extreme promptness with which the oiler obeyed his order caused the bucket to slam back on the barge, narrowly missing one of the shovelers who was hopping round the barge holding his hand on a part of his cranium where a piece of coal had descended.

While the bucket was being refilled the Second addressed a few remarks to an individual who was endeavoring to manipulate a guide rope attached to the bucket, a turn of said rope being round a heavy wooden peg attached to the side of the barge.



"THEY'LL BE ALL RIGHT WHEN THEY GIT INTO THE SWING OF IT."

float was knocking off for his supper, an oiler having volunteered to take his place pro tem. With a supercilious smile the oiler was ignoring all the good-natured winchman's advice, assuring him that he could run "any darned old thing." The winchman disappeared with a dubious shake of his head. A bucket, ready filled, lay on the barge, the men resting on their shovels to await the empty return. Up on a platform at the coalport on the ship's side two men stood by the chute to tilt the bucket.

"Let 'er go!" yelled another dusky figure, balancing himself dangerously near the edge of the barge—the second assistant.

In response the winch rattled and the bucket sailed with lightning velocity into the air. At least, it sailed as far as the platform on which the "tilters" stood. Catching under this it came to an abrupt stop, the sudden

"Try er again, and go easy" came the order. The temporary winchman, telling the winch it was the "darnedest old box o' tricks he'd ever seen," gently pulled the lever. The bucket slowly clambered over the coals and swung clear in a gradually increasing circle as it arose from the barge. On the platform the men stood ready to arrest its progress, one of them wildly grabbing at it as it sailed past. He had made a trifling miscalculation, however, and would have probably joined the bucket in its airy flight had not his mate with great presence of mind seized him by the stern portion of his nether raiment.

"They'll be all right when they get into the swing of it," cackled the weary First.

"Here, you," bawled the Second to the man on the rope, "what in hell are you trying to do with a double turn on that line, do you want to

spill the barge?" This humorous remark was lost on the line man who suddenly slipped the peg sending the bucket with a triumphant thump against the coal-chute.

"He's the fourth man on that line today," grunted the First, "number three being down in the fo'castle nursing a pair of flayed palms. If they are moving along all right out here there is sure to be trouble with the gang of 'mothers-helps' in the bunkers. Of course, they are getting pretty well paid for the work and doing their best, but"—and the First shook his head despondingly.

The rattle, bang and clatter, still went on, and Johnson's friends with a sympathising shake of his hand stole softly away. It was no place for a dry goods clerk. The last glimpse they had of the First showed them that individual shaking his fist in the direction of the barge, at whom, they didn't pause to see.

THE "STAND-BY" MAN.

TIETJEN & LANG'S NEW DOCK.

The Tietjen & Lang Dry Dock Co., of Hoboken, N. J., has added another dock to their already large plant. In response to their invitation, a considerable number of guests left Hoboken and New York to attend the launching of the new dock at Tottenville, Staten Island, on May 14. Though the hour was early, the tender Isabel leaving Battery Park landing at 7 a. m., the

out a creak on tremble. Immediately after the dock took the water the guests re-embarked on the tender for the return journey to the city, the dock leaving for her berth at Hoboken in tow of a fleet of tugs, there to

AMERICAN STEAMBOAT SPEEDS.

River steamboats on the Hudson have long been noted for their speed, but it is not generally known what high speeds were made by some of the



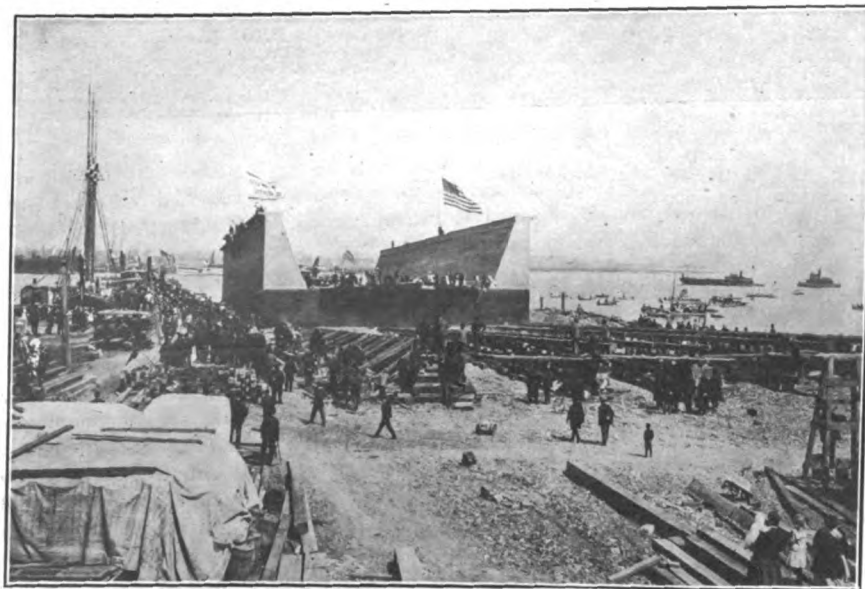
AFLOAT.

have her pumping machinery installed. Luncheon was served to the guests, amongst whom were many representatives of ship building and engineering firms, and the usual toasting took place. The health of Mr. Lang, the host, and success to the dry dock,

earlier vessels used on this river and on Long Island sound. In 1835 the Lexington ran from Sands Point light to the Battery at the rate of 17.26 miles per hour. In 1866 the City of Boston made 23 miles an hour on the Sound.

These speeds compare very well with those of the latest river and Sound steamers.

The best speed of the Richard Peck was 21.03 miles per hour. The Priscilla in 1894 covered 27.6 miles at the rate of 23 miles an hour. In 1899 the Puritan made her best speed—22.98 miles an hour. The Albany in 1880 made 23.26 miles an hour, and the New York in 1903 made 23.21 miles an hour. The Mary Powell in 1873 showed a speed of 22.54 miles per hour, and the Rhode Island that same year covered 21.17 miles in one hour. The new Hendrick Hudson is said to have made a short run at the rate of 24 miles per hour.



ON THE WAYS.

gentle sex was well represented, the weather being all that could be wished to make the trip pleasant.

The launching took place shortly after the party arrived at the yard, the great dock gliding down the ways with-

was proposed by Mayor Steils, of Hoboken. The new dock is 330 ft. in length, 100 ft. wide, and has a capacity of 6,000 tons. It will be the ninth dock in use in Tietjen & Lang's yard, and the second largest.

The submarine torpedo boat Lake underwent her torpedo firing and sea behavior trials last week. In the former she fired three torpedoes at a target representing a battleship at 800 yards. One torpedo hit the target squarely in the middle. The other shots failed, on account of the torpedo machinery failing to act in one instance, and on account of the premature discharge of the torpedo in the other. The boat behaved well in the rough sea.

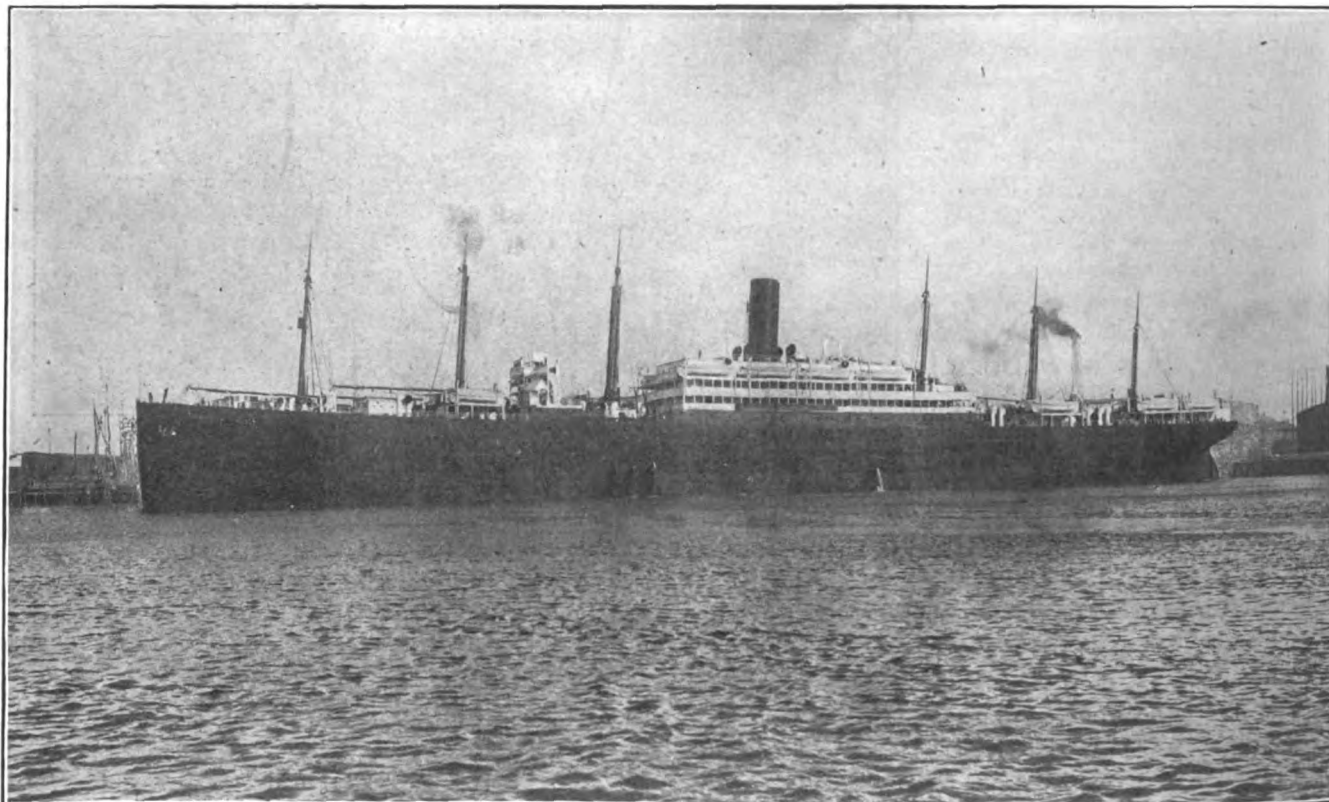
NEW HAMBURG-AMERICAN LINER.

After being completed by Messrs. Harland & Wolff of Belfast, the new steamer President Lincoln has just been added to the fleet of the Hamburg-American line. The President Lincoln is 616 ft. long, 68 ft. 6 in. broad, 45 ft. deep; has a gross tonnage of about 18,500 tons. is fitted with six pole masts, and constructed of steel throughout with cellular double-bottom extending the full length of the ship, the holds being subdivided into separate compartments by

nic electric clocks. The vessel is also fitted with the latest type of submarine signaling apparatus, and is lighted throughout by electricity. To deal expeditiously with cargo there are eleven cargo hatches which are worked by steam winches of the most modern description. The propelling machinery, which is of Messrs. Harland & Wolff's latest type, consists of two sets of quadruple-expansion engines, specially balanced to reduce vibration to a minimum. She sailed for New York on her maiden trip on June 1. Her sister ship, the

1903. She has three screws, three funnels, a military and a signal mast. She is 439 ft. long, and has coal capacity equal to 8,390 knots at 10 knot speed. Her armor is of Harveyized steel extending 8 ft. below the water line and 11 inches thick at the line. There is also a protection deck. The weight of her armor is 4,000 tons.

Her armament consists of four 12 in. breechloading guns arranged in pairs in the turrets, ten 7½ in. and eight 3.9 in. guns, twenty-four 3 pounders and two 1 pounder quick firing guns. She



NEW HAMBURG-AMERICAN LINER PRESIDENT LINCOLN.

water-tight bulkheads to meet the rules of the See-Berufsgenossenschaft. Accommodation is provided for between 300 and 400 first-class passengers, which is of an up-to-date character, including new features such as a gymnasium, electric light baths and massage appliances. There is also provision made for 125 second-class travelers. Third-class passengers are accommodated on the middle and lower decks aft, and provision has been made for 1,000 persons. All of these being in enclosed rooms. There is also accommodation for no less than 2,300 fourth-class passengers on the middle and lower 'tween decks in open steerage berths. It will thus be seen that this new Atlantic liner has a capacity for no less than about 3,800 passengers of all classes. A Marconi long-distance telegraphic apparatus has been installed on the boat deck, and there has also been provided a complete system of synchro-

President Grant, is in a fairly advanced stage of construction, and is expected to follow about the middle of September.

FRENCH WARSHIP VERITE.

The French warship Verite was successfully launched at Bordeaux on May 28 with all her machinery and armor plate complete. She needs only to have her ordnance placed on board. This is the first time that so important a vessel has been launched so nearly ready for service. Special care has been taken to keep the black and smokeless powder magazines distant from each other. Each magazine can be flooded while the vessel is in dock or at sea, the magazine being also freely ventilated. No electric apparatus capable of giving off sparks is fitted near the magazines. The Verite is a battleship of 14,865 tons displacement. Her keel was laid down in

has five torpedo tubes, three behind the armor and two submerged. She will carry 793 officers and men. She is the last of six battleships built on similar models, beginning in 1901.

A demonstration of the utility of wireless telegraphy was made by Capt. F. A. Stewart, of the steamer Western States, last week, when he wired from mid lake to Mr. W. E. Lloyd, of the Mutual Transit Co., Buffalo, that the steamer Northern King was disabled ten miles east of Bar Point and would need assistance to reach Buffalo. Ten minutes after the message was received a tug was sent from Amherstburg to the disabled vessel. Such a service as this is absolutely invaluable to vessel interests. Through its use life, property and time can be saved.

AT HEAD OF THE LAKES.

Duluth, June 3.—If there has been any doubt up to this time regarding the rate at which ore is being moved from the head of the lakes it must surely cease with a glance at the figures for the month of May. The Missabe docks made two records handling during the month 1,835,921 tons of ore or 695,160 tons more than in May, 1906, and 34,825 tons more than the previous record made last July. The second record was in the unloading of 2,546 cars in 24 hours. It will be gratifying also to the large number of independent interests shipping from Allouez to note that the Great Northern railroad has more than made good its proposed increase of 50 per cent in tonnage handled during May. The shipment from Superior was 994,504 tons as compared with 657,924 tons in May, 1906, an actual increase of a little more than 51 per cent. If the boats which have been the cause of delays up to this time arrive in good season at Allouez from now on the Great Northern will undoubtedly ship its full quota.

The Two Harbor docks also showed an increase for the month with 1,203,428 tons this year against 1,011,430 tons in May last year. This aggregates a shipment of 4,038,853 tons from the head of the lakes during May, an increase of 1,228,738 tons over last year. The total for the year is 4,487,750 tons so that at the end of May the shipments are about as far ahead of last year as they were behind at the beginning of the month or 693,021 tons. With the new boats available this month the June tonnage bids fair to make another record. During the past few days cargoes have been smaller as 18 ft., 10 in. was ordered as a maximum draught for the Sault river, but the government today increased that to 19 ft. 4 in.

The grain movement during the past week was unusually light, only 1,050,887 bushels being shipped altogether. The receipts also were very small. Below is the comparative statement for the past two weeks:

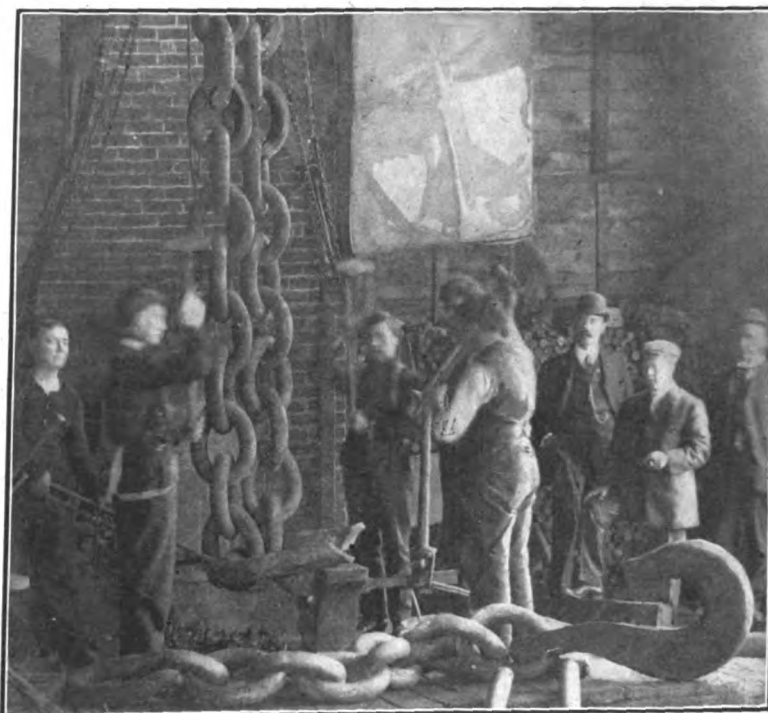
	—Week May 25—		—Week June 1—	
	Receipts.	Shipm'ts.	Receipts.	Shipm'ts.
Wheat	686,805	1,240,232	425,629	695,224
Corn	1,292	531
Oats	57,509	103,218	54,066	194,161
Rye	4,929	4,933	1,232	754
Barley	54,962	214,186	50,607	60,112
Flax	245,262	447,489	177,978	100,624

The coal tonnage coming to the head of the lakes continues large particularly in bituminous grades. The coal docks are in good shape and shipments away from the docks are fair. The Northwestern Fuel Co. is installing a new Brown Hoist bridge on its No. 1 dock, Superior which will in-

crease the shipping facilities materially. The Philadelphia & Reading Coal & Iron Co., has begun work on its new coal dock to be located on the bay side of Connors Point next to the dock of the Northern Coal & Dock Co. This dock will not be finished for two years and will handle both anthracite and bituminous coal. This year only the wood cribbing will be put in, the contractors being Whitney Bros.,

SENECA CHAIN CO.

The Seneca Chain Co., Kent, O., has recently completed a 3¼-in. chain for the Edison Engineering Co., of New York, one of the largest chains ever made in this country. The links in the chain weigh 94 lbs. each and the hook weighs 457 lbs., the triangle being of 4½-in. iron. The company makes chains from the smallest sized



MAKING A 3¼-IN. CHAIN.

of Superior; 75,000 ft. of lumber will be used. Above the 18 ft. of wood the dock will be built of concrete and will be 1,165 ft. long and 672 ft. wide. The kind of machinery to be installed has not been decided upon yet.

The government engineer, Major Fitch, is asking for bids, to be opened June 15, for a steel tug. Specifications for the tug, which is to be 85 ft. long can be obtained from the engineer's office, Duluth. The government has an appropriation of about \$35,000 available for this purpose.

The steamer Weston aground on Outer Island and later pulled off by the tug Crosby and the steamer Rogers after lightering 1,200 tons of her cargo proceeded to Duluth under her own steam and was found not to be leaking. She is not yet unloaded and a survey of the damage has not been made but it is thought she will not have to go into dry dock.

The steamer Wm. B. Kerr took 11,414 tons of iron ore to Buffalo, the largest cargo ever delivered at that port.

wire to the largest ship cables. It has contracts on hand now for cables for twenty-three lightships, also heavy cables for the Newport News Ship Building & Dry Dock Co., and the Union Iron Works, of San Francisco. The company is prepared to turn out both stud link and close link cables of any size. Its business is rapidly growing and it has recently increased its capital stock from \$200,000 to \$300,000 for the purpose of building a plant at Mansfield, O. The buildings at Mansfield will be built of brick and stone, the main building being 60 x 160 with two forge shops 40 x 228 each. The plant will be equipped with a 150-H. P. gas engine, testing machine, track railroad scales, and the most modern equipment in the way of chain-making machinery. The company is now employing at its Kent plant over 400 hands. It is employing about 100 hands at Zanesville, but will move the latter plant to Mansfield upon the completion of the buildings at Mansfield, when it expects to employ at that plant 250 men.

LAKE SHIP YARD METHODS OF STEEL SHIP CONSTRUCTION

BY ROBERT CURR.

The shell plating shown on the midship plan is lettered from the strake next to the keel plating, the keel plating being considered by itself and marked K is 42 ins. wide and 37½ pounds per square ft.

A strake is 88" wide and 28½ pounds per sq. ft.

B strake is 88" wide and 25½ pounds per sq. ft.

C strake is 88" wide and 25½ pounds per sq. ft.

D strake is 80" wide and 31 pounds per sq. ft.

E strake is 78" wide and 31 pounds per sq. ft.

F strake is 78" wide and 25½ pounds per sq. ft.

G strake is 78" wide and 25½ pounds per sq. ft.

H strake is 78" wide and 35 pounds per sq. ft.

S Sheer strake is 80" wide and 40 pounds per sq. ft.

The laps of the plating are shown on the midship section and seldom are changed amidships from this plan.

The keel plating laps are 6 in. wide, the outer edge of A and strakes B, C, and D have 5¼ in. laps E strakes 6 in., F and G 5¼, H 6 in. and S Sheer strake 10 inches wide.

As well as the scantlings the location of the longitudinals are shown on the midship section and are definite.

The measurements given for the hatch openings are 37 ft., being 18 ft. 6 in. on each side of the center. The hatch coamings are 26 in. nearer the ship side which makes the distances between hatch coamings 41 ft. 4 in. from side to side.

The rise of floor of this vessel is 4 in. and the camber of the tank top is 2 in., making the height of the tank top at side 5 ft. 4 in. above the base line.

The side line of the tank is governed by the camber but the other lines run parallel with the sheer.

The sheer at lowest point measure 30 ft. above the base line and the main deck is 10 ft. below sheer or 20 ft. above the base line at lowest point the main deck running parallel with the spar deck which is parallel with the sheer. The channel stringer fitted 4 ft. 9 in. below the spar deck runs parallel with same.

The side stringers between the main deck and tank top run parallel with the

main deck at the height shown on midship section. The girders are all run parallel with the center keelson at the distance shown on plan the girder E being in line with the inside of the tank at side.

The girders are in one piece from the top of the floor plate and below the floor to the shell plating intercostals are fitted connecting the girders, floors and shell plating together.

These girders run parallel with the center keelson and are scored out on top so that the tank top stiffeners pass through.

Section showing longitudinals seen on the midship section plan shows clearly the arrangement of the material for the girders which are composed of longitudinal continuous plate, continuous bottom angles, intercostal top angles to tank top and flanged intercostal plates connecting the girders. Channel floors and shell plating together.

The vertical stiffening angles and clips for the intercostals are riveted to the channel floors and are considered with the frame of the ship.

The intermediate stiffeners under the tank top spaced 18 in. apart are shown on the plan Fig. 1. These angles are connected to the girders with flanged bracket plates 16 pounds per square ft. every three feet. The angles coming on the frames are connected to the vertical stiffeners as shown on plan Fig. 1, the main frame.

Connection of plate girder to arch is also shown on Fig. 1. The plate girder runs in line with the hatch openings and is intercostal between the arches. In way of the beams the girder plate is punched out so that the plate may fit close to the deck plating and be connected to the deck plating with angles fitted between the beams as shown by the sketch.

This detail shows the arrangement of material for the deck girder which is composed of plate fitted between the arches also the bottom angle and bracketed to the arches with 15 pound per square foot of flanged plate. The girder plate is connected to the deck and begins with angle clips as shown by sketch.

Section showing side stringers illustrates the make up of the side stringers in the side tank between the tank top and main deck and are composed of channels 12 in. x 25 pounds, 16

pound per sq. ft. flanged intercostal plates and 16 pounds per sq. ft. bracket plates at ends.

The channels are intercostal between the web plates and connected to same with brackets as shown on detail.

The side stringer between the main and spar deck is composed of 15 in. x 33 pounds channel continuous and 16 pounds per square ft. flanged intercostal plate.

Under the spar deck is fitted between the hatch opening and ship's side a continuous 12 in. x 25 ft. channel and intercostals of the same material as the beams connecting this girder, beams and deck together.

The material shown by midship section and details Fig. 1, practically covers the scantlings for this vessel and it would be hardly possible to successfully design a vessel without this information. It will be noticed that the materials are all very much alike so that a standard is adopted of same on the lakes.

A great number of plates and shapes can be ordered alike which saves trouble and expense in sorting out and handling a number of times. The MARINE REVIEW on May 2, writes an article entitled "Not Yet But Soon," which describes the advantages of the lake system of work which might be applied to all the departments of lake ship building.

Standardization is the object in all the departments of the lake built ship so that numerous pieces may be made from one mold or pattern.

The economy of this may be realized when one considers the many plates and shapes which may be put in place on the ship without shearing anything off same, leaving no scrap whatever from the material on the dead flat part of the ship.

MATERIAL.

All the plates and shapes to be of mild open hearth steel tested at the mill to the following specifications: Tensile strength to be not less than 54,000 or more than 64,000 pounds per square inch; limit of phosphorus not to exceed 0.08; elongation to be not less than 24 per cent in eight inches; eduction to be not less than 45 per cent.

Reports of tests to be furnished with invoices and plates are not to run over

or under theoretical weight more than $2\frac{1}{2}$ per cent.

Rivets to be of the best open-hearth steel. Tensile strength to be not less than 52,000 or more than 62,000 pounds per sq. in.

Limit of phosphorus not to exceed 0.04 and limit of sulphur not to exceed 0.04. All materials to stand work in the ship yard without injury.

The scantlings shown and described with the midship section, Fig. 1, practically covers the material composing the structural strength of the ship and is governed by rules drawn up by various classification societies.

Of such institutions Lloyds Register of British and foreign shipping may be regarded as the parent; it is by far the most influential, for the total tonnage of all existing vessels in the world (steamers and sailing ships of 100 tons and above) almost two-thirds has been built in conformity with Lloyds rules and more than one-half continues to bear Lloyds class.

On the great lakes the vessel construction is greatly different to the ocean and a system is adopted to suit the traffic and facilitate in dispatch of loading and unloading the ships.

New systems require the same experience as older methods and it is necessary to follow up in the old way to find out any defects which may show up in the new construction.

On the lakes the Great Lakes Register was incorporated eleven years ago and has been steadily gaining until today it stands as the recognized authority as to all lake vessels and is in the hands of, and subscribed to by all the leading underwriters of the world.

The prime object of classification is to establish a standard for the building of vessels, and the rules laid down by the register are such as to insure a strong, well-built and seaworthy vessel, and if built under the supervision of the Register surveyors, is entered in the Register with a special mark *.

The ratings of the register are as follows, according to their structural worth and condition:

*100. First class in every respects and built under supervision.

100. First class in every respect and not built under supervision.

95, 90, 85, 80, according to structural worth and condition as the examination may prove.

The value of classification is shown by the fact that vessels not built under supervision are in a great many cases, built of lighter material and are of less value, than where she is built to classification in which case standard requirements are insisted upon, whereby

the owner obtains a strong and better vessel and the underwriter a safer risk.

A classification society such as the Great Lakes Register is in a position to acquire experience of a most practical and valuable sort; for it not only supervises the construction of many vessels in each year but has them under constant survey.

Should any weakness or defects develop, whether due to insufficient scantlings, bad workmanship, material or design, the circumstances is carefully considered and recorded.

Having in this way constantly under observation many vessels the practical knowledge acquired empowers the society to start with assurance what is required and what should be avoided in a sound structural design. It is sometimes urged that the ship builder should be the best judge of what are the best methods of construction, and how much strength a ship should have; but to build and launch a ship does not prove her success; it is only some years of active service in all kinds of weather, that the efficiency of the structure may be said to be proved.

It is sometimes asserted that by formulating fixed rules, classification societies tend to restrict design and hinder progress.

Departures from the rules in the building of classed vessels are only debarred when they tend to reduce the strength and encroach on the margin of safety found by experience to be the minimum compatible with a sound and efficient ship.

Many high class vessels are built with very considerable modifications from the methods of construction set forth in the rules, but these are usually in the direction of increased strength and efficiency.

It is evident that where there is any doubt as to the efficiency of departures from usual practice, a classification society must exercise caution and circumspection; representing, as it does, the general public, it is not for it to foster or originate new and untried schemes.

On the ship owners contracting with the ship builder for the building of his vessel to class say, *100, the first work of the builder is to have drawn a set of plans upon which is shown the structural arrangement of the vessel in accordance with the instructions contained in the classification society's book of rules and the scantlings of each structural part are figured upon these plans.

They are next sent to the classification society's registry where the scantlings are checked and special

structural requirements of the particular vessel are considered.

The plans are then returned to the ship builder with the necessary corrections or additions required clearly marked upon them.

This is the first introduction the ship has to classification society but from that day to the time of her completion she is the object of their constant attention.

Indeed throughout her existence so long as she is classed she is periodically subject to inspection by their surveyors.

Vessels are built independently of all society rules and still obtain a class, the ship owners in this case employing thoroughly capable naval architects to design their own vessels and determine the scantlings themselves.

Such vessels are distinguished by the term "unclassified" though it should be clearly understood that an unclassified vessel is by no means necessarily inferior in any way to the classed one.

Vessels built without any supervision would require to be thoroughly surveyed by the surveyors, and after an accurate estimate had been made of the structural worth in comparison with their own particular standard a class corresponding to one of the grades of the classification society in question would be assigned to her.

While it is customary for ship owners to have new vessels built to the highest class, it does not follow that such vessels will always maintain the highest class. Every year surveys are held and as long as the vessel maintains her structural strength, she maintains her class; but as soon as she begins to deteriorate, and suffer reduction in structural strength, her class may be reduced to 95, 90, 85 or 80 which simply means that she is now less able to carry the same deadweight as originally, her free board is increased until her carrying power is in accordance with her strength.

To maintain her class this can be done by carrying out certain repairs and restoring the vessel to her original class.

Great Lakes Register measurements are measurements.

(1) Length. L. From the forward side of the stem to the after side of the stern post measured on a water line calculated at $2\frac{1}{2}$ inches of free board for every foot molded depth of hold.

(2) Breadth. B. Maximum molded beam.

(3) Depth. D. From the upper side of the garboard strake to the top

of the upper deck beams at center line amidships.

SCANTLINGS.

(4) Scantlings determined by length and depth. Bar keels; stems; stern posts; flat plate keels; shell plating; frame spacing; rudder post and pintles; keelsons; keelson angles; bulkheads; ceilings; deck stringers; tie plates; deck plating, and stringer angle bars.

(5) Scantlings determined by the formula; $B + D$. Frames, reverse frames, floors and stanchions in connection with their length.

(6) Scantlings determined by length of vessel.

(a) Center keelson, tank top plating side keelson and keelson angle bars of double bottom vessels.

(b) The side plating, deck stringers, tie plates, bulkhead plating and stringer angle bars of a Poop Raised fore-castle, quarter or awning deck.

(7) Scantlings of beams are determined by the length of the beams amidships.

(8) Equipment number

$$\frac{L \times B \times D}{125} + 80$$

per cent of the capacity of the deck erections.

QUESTIONS FOR WHEELSMEN AND WATCHMEN.

THIRD INSTALLMENT.

25. What is meant by the expression "Rules of the Road"?

26. Where could you obtain a copy of the "Rules of the Road"?

27. What does the first rule of the law governing the rules of the road relate to?

28. What is meant by the expression "meeting head and head?"

29. In the night time how could you tell when two boats were meeting head and head if the weather was clear?

30. How could you tell when two boats were meeting head and head in the day time with the weather clear?

31. What is meant by the "helm signals" for steamers?

32. What is the principle of the helm or course signals?

33. What is meant by the command of "port?"

34. What does one blast of the steam whistle indicate?

35. What is meant by two vessels crossing each other?

36. On which bow or side is the green light carried?

SUGGESTIONS FOR STUDY.

One of the very first things that the beginner must learn is the law governing the meeting and crossing of vessels under every circumstance. This is known as the "Rules of the Road." Do not

learn this law parrot-fashion, but on the other hand get perfectly acquainted with the principle upon which it is based. If you once understand its principle the law is easily understood. It is not necessary to learn the "rules of the road" word for word. If you understand the law that each rule is based upon, you can make your own rule, that is, you can explain it better in your own way. This is what the inspector will require of you. One could commit the rules to memory and yet not be acquainted with the first principle of them. If you know the rules and their application you will have no difficulty in making the examining board understand that you do, no matter how ungrammatical or loose-connected your construction of the rule might be. As long as the sense is there, that is all that is necessary.

In learning the rules of the road the terms "starboard" and "port" must be first taken in account. These terms are without doubt the most important used on board ship. The rules of the road are practically laid down on the meaning of these two terms. Starboard originated from the word steer-board—a board to steer the ship by the same as the rudder of today. The ancients carried their steering-board on the right side of the vessel and from this circumstance this side was ever afterward known as starboard, or starboard side. After the present rudder came into vogue and was placed amidships and controlled by a helm or tiller, it was termed "starboard helm" when the helm was moved toward or to the starboard side, and "larboard," now "port helm" when the helm was shoved toward or to the port side of the ship. When it was desired that the ship's head should be moved to the left, or simply to go to the left, the command was "starboard your helm." The helm was accordingly moved to starboard, and since the rudder moves the opposite way of a forward tiller, the rudder-blade must catch the water on the port side and turn the ship's head the same way, that is, to the left or port. Although this originated years and years ago, the same principle holds good today. The command of "starboard" is an abbreviation for "starboard helm," or "starboard your helm." This was done for brevity sake. The command of "port" means that the helm, or what constitutes or takes the place of a helm, is to be moved toward the port side. The rudder moves the other way and catches the water on the starboard and turns the ship's head the same way. It is for this reason that a ship's head goes to port with the command of "starboard" and to starboard with the command of "port." One not acquainted with this circumstance would naturally think that the boat ought to go to starboard

with a command of "starboard." Many boats do not have a tiller to their rudder, but are provided with a quadrant; others have a tiller shipped in the rudder-head from the after side, that is, leading aft instead of forward. This makes no difference as to the principle of the rules, the law is governed according to the above explanation.

One blast of the big whistle always means "port your helm." Now you will notice that when steamers are meeting one another head and head or nearly so, that a blast of one whistle is usually given, which means that each one must "port her helm" and sheer off to starboard. Two blasts of the large whistle means to starboard your helm and therefore direct your course to port.

Another thing you must bear in mind is this: The way you turn your steering wheel has nothing to do with these commands, for a straight gear will take the steering wheel the opposite way of that of a cross-gear for the same command, so that you can readily see that if this were the case it would cause the utmost confusion. No matter whether the gear is straight or cross the same command applies. The steerman must know his gear so that he can readily put his helm in the direction of the command, whether "port" or "starboard." There are several other little matters in connection with this that need explaining, but we will leave this for another time.

As a preliminary to a full and comprehensive understanding of the "rules of the road at sea" the committing to memory of the following poem will be found most helpful to the beginner. By memorizing this poem and repeating it often you will be able to recall the substance of a rule without so much as referring to it in the book. It will likewise help you to be doubly sure of a rule when you would have no other means of verifying it.

Here it is:

"RULES OF THE ROAD IN VERSE."

1. TWO STEAMERS MEETING END ON, OR NEARLY SO.

Meeting steamers do not dread
When you see three lights ahead,
Port your helm and show your Red.

2. TWO STEAMERS PASSING.

For steamers passing you should try
To keep this maxim in your eye:
Green to Green, or Red to Red—
Perfect safety—go ahead.

3. TWO STEAMERS CROSSING. THIS IS THE REAL POSITION OF DANGER.

The steamship that has the other own her own Starboard side she shall keep out of the way of the other.

There is nothing for it but good lookout, caution and judgment.

If to starboard Red appear,

'Tis your duty to keep clear;

Act as judgment says is proper—

Port or starboard, back or stop her.

But when on your port is seen

A steamer with a light of green,

There's not so much for you to do—

The green light must keep clear of you.
 4. ALL SHIPS MUST KEEP A GOOD LOOK-
 OUT, AND STEAMSHIPS MUST STOP AND
 GO ASTERN, IF NECESSARY.
 Both in safety and in doubt
 Always keep a good lookout;
 Should there not be room to turn,
 Stop your ship and go astern.

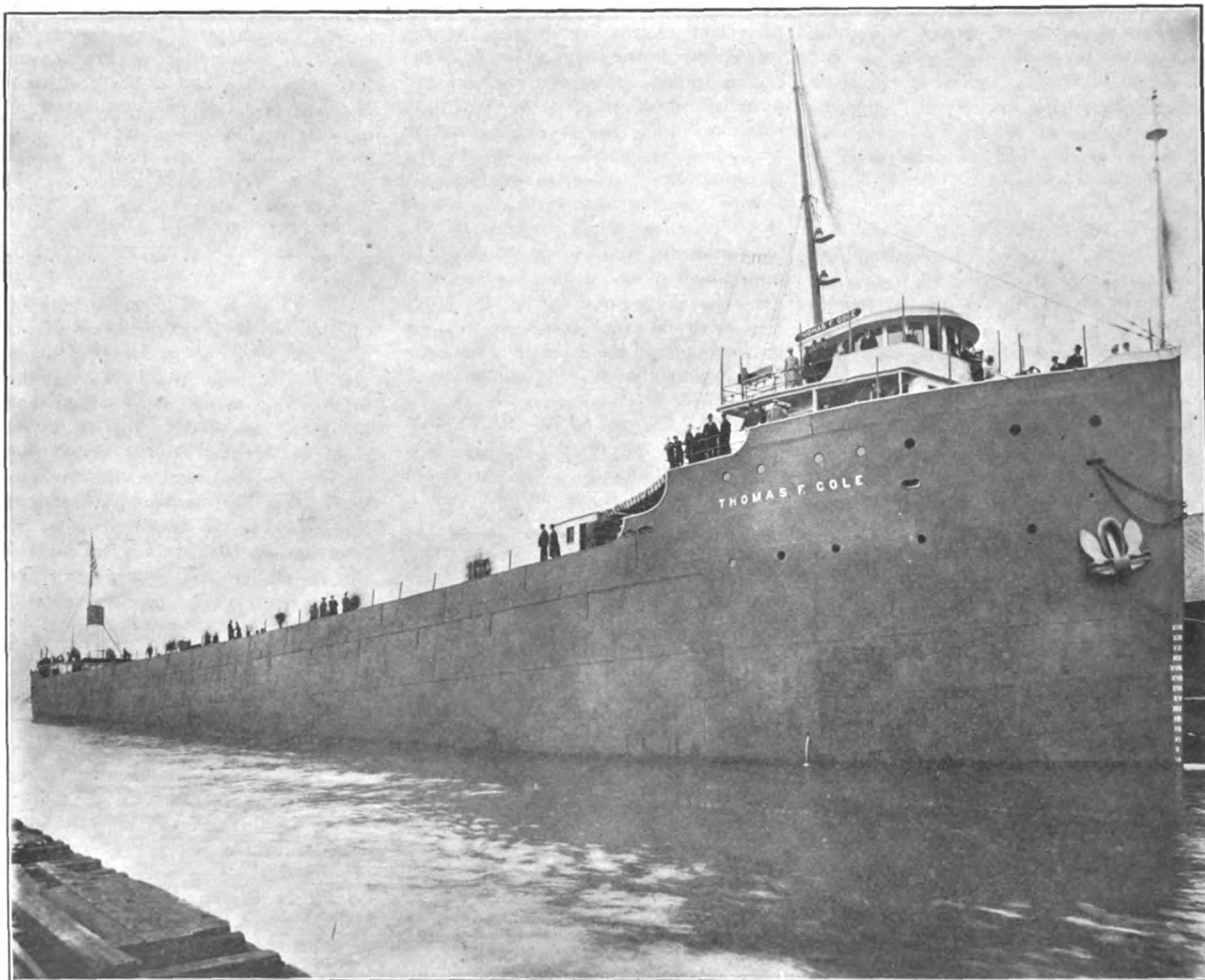
GREETING THE NEW STEAMER THOS. F. COLE.

The steamer Thomas F. Cole, the latest addition to the fleet of the Pittsburg

luth at 8:30 on Decoration day morning for Two Harbors, where the Cole had put in to await the arrival of the visitors. It was a holiday for boat and people alike. The boat which had been open to the inspection of the people at Two Harbors all morning remained at anchor until 10:45, when, accompanied by the best efforts of all the whistles in Two Harbors, the band of 18 pieces on deck and even the old harbor bell, moved away from the dock with a cargo of

those who enjoyed the trip and those who climbed aboard and were given free run during the hours when the boat was tied up at the dock, both at Two Harbors and Duluth, could not but feel that the Pittsburg Steamship Co., as representing the Steel Corporation, counts the public a shareholder in its confidence and enterprise.

As the boat approached Duluth before the shrieking whistles which afterward welcomed her arrival could drown all



THE NEW STEAMER THOMAS F. COLE.

Steamship Co., left the Great Lakes Engineering works at Detroit, on Sunday morning, May 26, and arrived at Two Harbors during the night of May 29, on her maiden voyage. This inaugural trip begun with a large party headed by President Harry Coulby on board as far up as Port Huron, became in the closing run from Two Harbors to Duluth, an occasion unique in its public character and delightful in its sociability and pleasantness.

A special train carrying nearly 300 guests invited by President Coulby for the Pittsburg Steamship Co., left Du-

luth at 8:30 on Decoration day morning for Two Harbors, where the Cole had put in to await the arrival of the visitors. It was a holiday for boat and people alike. The boat which had been open to the inspection of the people at Two Harbors all morning remained at anchor until 10:45, when, accompanied by the best efforts of all the whistles in Two Harbors, the band of 18 pieces on deck and even the old harbor bell, moved away from the dock with a cargo of

people, officers and crew about as satisfied with the United States Steel Corporation, "Tom" Cole, the boat, Captain "Jim" Morgan, themselves and even the weather as most anyone could be. The trip was made at a very leisurely gait. Every arrangement possible was afforded the guests for inspecting the ship and enjoying all its comfortable provisions. Lunch was served in the private dining room forward and under an immense awning stretched across the deck and from pilot house to engine room it was the people's boat for the day. In fact, so liberal was the cordiality that all

manner of speech, City Attorney Fesler, acting for Mayor Cullum, gave welcome to Capt. Morgan and his craft in words that bespoke acknowledgement of Duluth's indebtedness to the man in whose honor the boat was named and to the company in whose fleet it sailed for their large share in the upbuilding of the city. Capt. Morgan replied in a manner as happily chosen as it was full of good feeling, thanking the city attorney, the guests and everyone for their generous assistance in bringing the boat into the harbor without which timely aid the feat would scarce have been possi-

ble, and gratefully accepted the privilege of running his boat through their canal.

Called upon by acclamation to say something of what he felt, the president of the Oliver Iron Mining Co., as host of the day, found the tributes of his friends, expressed as they were in the naming of the boat, in the care that had made it the flagship of the fleet in fact as well as in name, in the cordial response with which the people of his own city had joined in greeting the new boat and in the genuine pleasure every one seemed to feel in his honor, a cup full almost to the brimming. What he said made no difference, because it rang with that characteristic sincerity and simplicity that has brought him at the same time business success and the admiration of his fellow workers.

At Duluth the piers were lined with citizens, many of them guests who had been unable to go to Two Harbors, and for two hours after tying up at the foot of Sixth avenue, the boat was crowded with people.

The Thomas F. Cole is a sister ship of the J. P. Morgan, and has been built and fitted out in accordance with the latest ideas of comfort and workmanship. She is equipped with the submarine signalling device and with an improved electric whistle. The whistle may be operated by means of a Morse key, and it is unique in its responsiveness. For use in a fog where blasts at regular intervals are blown an automatic device has been provided. A three-toothed ratchet driven by clock work is connected with a key and when in operation the teeth of the ratchet engage the key at intervals of ten seconds, thus blowing the whistle. There is an observation room forward of the captain's quarters and an enclosed pilot house above. The passenger staterooms are on a level with the deck and the private dining room is just back of the first hatch.

The cabins and quarters aft have been made very comfortable for the engineers and crew, following the ordinary layout of above deck cabins. Lugs are fastened in the deck opposite each hatch for a portable tackle stand and the hatch covers are pulled off by a cable from the deck engines. The engine room has the usual features. A refrigerating plant is installed and the electric generating plant is in three units. A turbine centrifugal pump is used for handling ballast water.

The steamer is 605 ft. 5 in. long, just five inches longer than the largest ship on the lakes, is 58 ft. beam, 32 ft. molded depth and has a triple-expansion engine 24, 39 and 65 by 42-in. stroke. She has two boilers 15 ft. 4½ in. in diameter, and 11 ft. 6 in. long and has installed the Ellis & Eaves system of induced draft.

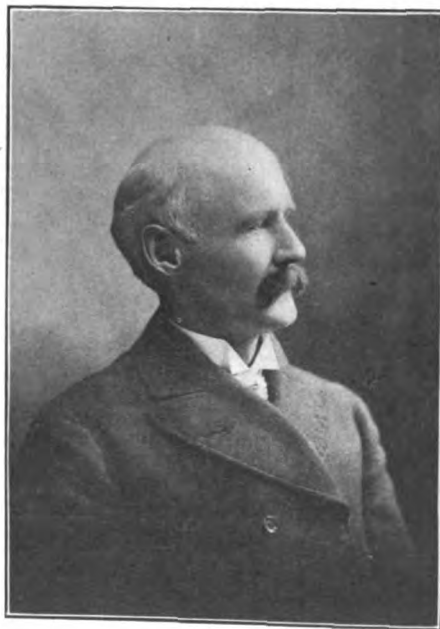
On her first trip the Cole gave excellent satisfaction in her handling. She

made the trip up Lake Huron in the face of a 35-mile gale in 23 hours without any trouble. Leaving Duluth she carried 11,500 tons of ore on a draught of 19 ft. 3 in. forward and 19 ft. 7 in. aft. The Lake Superior cargo record is 11,868 tons on a draught of 19 ft. 10 in., so that the new boat's cargo, which was the largest this year, augurs a large carrying capacity during the season.

The steamer Cole has had an auspicious beginning. A beginning worthy of the man for whom she was named, but more than that, a beginning in keeping with the broad and liberal policy of her owners. The entire affair, participated in not only by the Steel Corporation officials and the vessel interests at the head of the lakes, but by men representing all of the varied enterprises of Duluth, together with their wives, was in its planning, in its carrying out and in the cordial response with which it met, a seal of the mutual confidence by the Steel Corporation and by the people of Duluth in each other. In this was the greeting of the steamer Thomas F. Cole distinctly noteworthy and unique.

DEATH OF CAPT. RATTRAY.

The late Capt. E. T. Rattray, who died at his home No. 3607 Archwood avenue, Cleveland, on May 29, was a



CAPT. E. T. RATTRAY.

prince among lake masters. He was 52 years of age and was born at Clayton, N. Y. He started sailing on the lakes in sailing vessels when a boy and soon became a mate, and at the age of 21 was master of a sailing vessel. He was master of steam vessels for more than twenty-five years. His first command was the steamer Continental. From the Continental he went into the Specular and later into the LaSalle and

Republic. When the Pittsburg Steamship Co. was organized he sailed the steamer Rensselaer for them, and when the United States Transportation Co. came into existence he entered its employ, sailing the steamer L. C. Smith, where he has been ever since. He was compelled through illness to leave the Smith at Milwaukee on her first trip this season.

Capt. Rattray leaves a widow, his only daughter having died in 1902. Capt. Rattray was a member of the local Shipmasters' Association, and was also a member of the Masonic fraternity. He had a host of friends and was probably one of the best and most favorable known masters on the chain of lakes. His funeral was attended by vessel men generally. The pall bearers were: Capt. E. Thorp, Capt. C. H. Woodford, W. Davis, A. Bolles, W. W. Wyman and George Milne.

Capt. Rattray had the singular distinction of never having had an accident as long as he was a master. He was a man that always helped others and many men sailing boats on the lakes today got their start from the genial skipper. He was a great man to mingle with his crew, some members having stayed with him as high as seven seasons with interruption. He was a lake navigator of ability and was a great supporter of scientific lake navigation.

IN HONOR OF COL. SULLIVAN.

The new steamer which is building at the Cleveland yard of the American Ship Building Co. for Hutchinson & Co., of Cleveland, will be named in honor of Col. J. J. Sullivan, president of the Central National Bank and of the Superior Savings & Trust Co. The boat will be operated by the Superior Steamship Co. of Cleveland. Col. Sullivan has latterly taken a great interest in maritime affairs, and the naming of the great steamer after him is a deserved compliment.

FREIGHTER FOR 1908.

Buffalo interests represented by J. J. H. Brown & Co. have given contract to the American Ship Building Co. for a new steamer to come out at the opening of navigation next year. The new boat will be 524 ft. over all, 500-ft. keel, 52-ft. beam and 28 ft. deep. She will carry about 8,500 gross tons.

The new wrecker Favorite succeeded in releasing the steamer C. F. Bielman and barge M. E. McLachlan which went ashore at Port Austin. This was the Favorite's first appearance as a wrecker and everything was found to work perfectly. The stranded vessels were not badly injured.

DEATH OF ANDREW BROWN.

The death occurred recently of Andrew Brown, the oldest ship and engine builder on the Clyde, in his eighty-second year.

Born at Glasgow, Mr. Brown, at the age of fourteen, was apprenticed as a mechanical engineer at the Oakbank foundry, and after serving a five years' apprenticeship became assistant mechanical draughtsman and foreman patternmaker to Messrs. Wm. Craig & Co., formerly Girwood & Co., a notable firm in the early days of marine engineering. Transferring his services later to Tod & Macgregor, he acquired considerable experience in designing P. and O. and other steamers.

Thereafter he was engaged in the St. Rollox locomotive works of the Caledonian railway, but the marine side of the profession was his special bent, and in 1850 he was appointed engineering manager of the well known firm of A. and J. Ingles, ship and engine builders. During the years he filled that important post he was responsible for the designing and completion of a large number of marine engines of various types. Amongst other work on which he was engaged in 1851 and 1852 were two pairs of geared beam engines for screw steamers on the Leith and London service, the first on that route.

In 1860 Mr. Brown was invited to join the late William Simons in partnership at Renfrew. Immediately thereafter he began the study of the problems relating to steam dredgers and dredging plants, the fruits of which study have given his firm a world-wide reputation. Between 1861 and 1863 he designed and constructed four self-propelling hopper barges for the Clyde trustees, the first of their type. He was also the inventor of the type of vessel now known as the "Hopper Dredger." The Pioneer sand-pumping apparatus employed on the Mersey was also one of his early productions, the powerful fleet of suction dredgers at Durban being also built by his firm. Although devoting much of his time and study to the construction of dredging plant, Mr. Brown did not confine his efforts to this particular branch of marine work. In 1861 he designed and constructed the Clyde passenger steamer *Rothsay Castle*, a sidewheeler, which attained the then phenomenal speed of 20.5 miles per hour. Fifty years later this vessel was, under another name, still plying on the Canadian lakes.

In 1868 he built and designed the *Anchor Liner India*, the first steamer on the North Atlantic trade fitted with four cylinder compound surface con-

densing engines. His firm also built the first steam ferry on the Clyde for vehicular traffic, and introduced the double-ended screw ferries on the Mersey.

BIDS FOR IMPROVING BUFFALO RIVER.

Bids have recently been opened by the department of public works of the city of Buffalo, which were submitted by the various dredging and contracting companies, upon the work of widening, straightening, enlarging, clearing from obstructions, dredging, deepening, embanking and diking of Buffalo river and Cazenovia creek and for altering the courses of the river and creek and for the construction of new channels for them.

The sections of the river improvement work are as follows:

Section No. 2. Buffalo river from the south line of lot No. 65, Indian Reservation, to the proposed junction with Cazenovia creek.

Section No. 3. Buffalo river from the proposed junction of Cazenovia creek to the easterly city line.

Section No. 4. Cazenovia creek from the proposed junction with Buffalo river to a point near Cazenovia street.

The following table gives the names of the bidders together with the amounts of their bids, for each section of the work.

Section No. 2.	
Buffalo Dredging Co.....	\$587,672.00
Lake Erie Dredging Co....	632,550.00
Thomas Brown Contracting Co.	702,400.00
Section No. 3.	
Buffalo Dredging Co.....	\$213,460.00
Thomas Brown Contracting Co.	285,000.00
John Miller and William Franklin Jr.	332,000.00
Joseph F. Stabell Co.....	338,000.00
Section No. 4.	
Thomas Brown Contracting Co.	\$ 88,200.00
Buffalo Dredging Co.....	91,248.00
Joseph F. Stabell Co.....	110,900.00
John Miller and William Franklin Jr.	114,800.00

The Buffalo Dredging Co. was declared the lowest bidder on sections two and three and the Thomas Brown Contracting Co. the lowest bidder on section four.

NINE LAKE BOATS BUILDING IN SCOTLAND.

The Glasgow correspondent, of the *Shipping Gazette*, says:

The succession of orders for steamers for the Canadian lakes becomes quite interesting. First we heard that Messrs. Archibald McMillan & Son, Dumbarton, are building four steamers, and the Grangemouth & Green-

ock Co., Greenock, one for service on the lakes; then that Messrs. McMillan had received an order for another similar vessel; now—this week—we have other two orders for lake steamers. The Grangemouth & Greenock Co., Greenock, are to build a vessel for the lumber and general trade, and the Caledon Ship Building Co., Dundee, a vessel of very similar size, though the trade is not specified. The newest Greenock steamer is to be delivered in August, and the Dundee vessel in September, so, as they are ships of about 250 ft., very little time will be lost. Including the two bigger steamers building at Fairfield for the Canadian Pacific Railway Co., there are now nine lake boats building in Scotland.

IRON SITUATION.

The buying of steel bars by agricultural implement manufacturers is the most active factor in the iron and steel market. Rails are less active, the heaviest order of the week reported being the Chicago & Northwestern for 40,000 tons for 1908 delivery. No very vigorous buying is expected until after the meeting of representatives of railroads and rail mills, when an agreement regarding specifications for rails will probably be affected. The pig iron market continues quiet but firm. The United States Steel Corporation has purchased 10,000 tons of low phosphorus iron for fourth quarter delivery.

AROUND THE GREAT LAKES.

The steamer *Henry Phipps* of the Pittsburg Steamship Co.'s fleet, will leave Bay City next week on her first trip.

The steel steamer *Ravenscraig* owned by R. J. Dunham of Chicago has been purchased by Atlantic coast interests.

The steel steamer *America*, sistership of the steamer *Brazil*, has been purchased by the Wisconsin Transportation Co. of Sheboygan.

Hans J. Hansen, for fourteen years a member of the Erie life savings crew, has been appointed captain of the crew at Cleveland, vice Capt. Charles Motley resigned.

The schooner *Buckeye* which has been running in the pulp wood trade has been sold by N. J. Chisholm to the Atlantic Coast Steamship Co.

Capt. A. B. Drake, representative of Inland Lloyds, and Joseph King of the Parker Bros. Co., are holding a survey of the steamer *Byron Whitaker* now at Ecorse.

The passenger steamer *Eastland*, which is to be operated between Cleveland and Cedar Point by the Lake Shore Navigation Co., reached Cleveland this week.

LAUNCHING THE WILPEN.

The bulk freighter Wilpen, building for the Shenango Steamship Co., was launched at the Ecorse yard of the Great Lakes Engineering Works on Saturday last and was christened by Miss Mary Black Snyder, daughter of Wm. P. Snyder, of Pittsburg. This unusual name is compounded from Mr. Snyder's full name which is William Penn Snyder, and the ship was named in honor of his country place near Pittsburg. The Wilpen is 574 ft. over all, 554 ft. keel, 58 ft. beam and 32 ft. deep. Her engines are triple-expansion with cylinders 24, 37 and 65 in. diameters, by 42-in. stroke, supplied with steam from two Scotch boilers, 16 ft. by 12 ft., equipped with forced draft and allowed 170 lbs. pressure.

The Wilpen is intended to be the flagship of the fleet that the interests associated with Mr. Snyder are now putting on the lakes. She is a well constructed vessel, being of unusual strength. The plates used in her construction are thicker than those ordinarily found in a lake freighter. For instance, the plates in the tank top are $\frac{5}{8}$ in. thick instead of the usual $\frac{1}{2}$ in.

Her passenger accommodations are of unusual elegance. Her texas instead of being 12 ft. fore and aft, as is customary, is 24 ft. fore and aft and 34 ft. wide. The captain's quarters on the starboard side run the whole length of the texas. Mr. Snyder's quarters are on the port side of the texas and the rooms for the two mates are just back of his quarters. There are three bath rooms on the texas deck. The passengers are accommodated on the spar deck beneath the texas. There are six state-rooms in addition to one room for the maids and one room for the valets. The passenger quarters are divided by hallways running both fore and aft and athwartships. Forward of the passenger quarters is the private dining room with pantry on the port side connected with the galley beneath by a dumb waiter. The staterooms are finished in white enamel. The dining room will be furnished throughout in mahogany. Brass beds will be used in the passenger quarters instead of the usual built-in berths. An observation room 28 ft. wide is located forward of the texas. This room will be finished in mission oak with mission furniture. The pilothouse will be a part of this room.

On top of the observation room will be the second pilothouse entirely inclosed, instead of as in most ships, having the customary canvas canopy.

In addition to the regular dining room aft there will be a private dining room for the captain.

The quarters for the crew have been carefully worked out. They are very commodious and have every convenience including separate baths for each department. Three sets of steering gear will be fitted, including the Akers emergency steam steering gear. The electrical quipment, which is very complete, will be supplied by the General Electric Co. Capt. Henry Peterson, who has been superintending the construction of the vessel will bring her out.

At the conclusion of the launch luncheon was served at the Detroit club. Mr. Snyder was accompanied from Pittsburg in the special car Tyron by Mrs. Snyder, Miss Mary Black Snyder, Miss Lucy Kay, Miss Bessie Woods, Miss Loader, Messrs. Jack Cappeon, G. Collinson Burgwin and Hamilton Harlow. In the Detroit party were: Col. Frank Hecker, Col. C. E. L. B. Davis, William Livingstone, George H. Barbour, Mr. and Mrs. L. C. Waldo, Mrs. J. C. Hutchins, Mrs. Arthur McGraw, H. W. Hoyt, Antonio C. Pessano and John R. Russel. Mr. W. B. Davock attended from Cleveland and the Hon. Peter White from Marquette.

LAUNCHING THE LELAND S. DEGRAEF.

The freighter Leland S. DeGraef, building at the Lorain yard of the American Ship Building Co. for the Weston Transit Co., of Tonawanda, was launched at noon on Saturday last and was christened by Mrs. DeGraef, wife of the man in whose honor the boat was named. The DeGraef is the largest boat ever built at Lorain, being 605 ft. over all, 585 ft. keel, 60 ft. beam and 32 ft. deep. Her engines will be triple-expansion with cylinders $22\frac{1}{4}$, $37\frac{1}{2}$ and 65 in. diameters by 42-in. stroke, supplied with steam from two Scotch boilers, 15 ft. $4\frac{1}{2}$ in. by 11 ft. 6 in., equipped with Ellis & Eaves draft and allowed 200 lbs. pressure. Her auxiliary machinery is very complete. Her electrical equipment is supplied by the General Electric Co. In the launching party were: Mr. and Mrs. Leland S. DeGraef, Mr. and Mrs. W. M. Mills and Miss Mills, of North Tonawanda; Mr. Robert Logan, Mr. Robert Wallace and Mr. O. H. Steele, of the American Ship Building Co.

EDDY-MAIDA COLLISION.

The steamer Selwyn Eddy, at one time the largest steamer on the lakes, was sunk in the Detroit river last Saturday off the village of Ecorse

in collision with the steel barge Maida, of the Pittsburg Steamship Co.'s fleet. Immediately after the collision the captain of the Eddy headed for the Canadian shore, the steamer sinking about 50 ft. from the shore in 25 ft. of water. The Maida was bound down in tow of the steamer Van Hise. She became unmanageable in the current before her anchor caught and sheered into the Eddy, which was upbound with coal. The Maida's stem was badly twisted in the collision but she proceeded to Lorain where her cargo of ore will be unloaded and where she will be repaired. Mr. R. Parry Jones, representing the underwriters, has closed contract with Capt. Harris W. Baker, of Detroit, to raise the Eddy.

SHORTAGE IN CANADIAN GRAIN CARGOES.

Editor MARINE REVIEW:—The following memoranda of the out-turn of a few cargoes of grain from Fort William and Port Arthur may be of interest to some of your readers.

In the fall of 1903 the steamer Sevona over-ran on a cargo of wheat from Fort William 8,604-10 bushels; in the fall of 1904 the steamer Oglebay with wheat from Fort William was short 2,774 bushels. On May 13, 1907, the steamer Luzon on a separate consignment of wheat in No. 1 hold from Fort William and Port Arthur was 912 bushels short. On the 16th of the same month the steamer W. D. Rees on a consignment of 170,000 bushels of oats (Canadian measurement, 34 lbs. to the bushel) was short 516-24, and on May 20 last the steamer Uranus on a consignment of 235,475 bushels of oats, Canadian measurement, was short 1,352-32 bushels, and on the same date the steamer F. W. Gilchrist on a consignment of 244,266-20 bushels of wheat was short 861-20 bushels. The worst shortage last month in proportion to the value of the cargo, was the steamer Plankinton which came from Fort William with a cargo of 98,075-40 bushels of wheat and ran short 1,964-40 bushels.

BROWN & Co.

Buffalo, June 1, 1907.

The steamer Frontenac which ran on Lake Michigan last year is scheduled to open a regular freight and passenger service between Cleveland and Bay City, making the initial trip on June 9.

The steamer Samuel Mitchell of the Richardson fleet towing the barge Chickamauga made the run from Cleveland to Marquette in sixty hours, an unusual performance.

METHOD OF FLOATING SUNKEN OR STRANDED VESSELS.

In the accompanying illustrations are shown two views of a method of floating sunken or stranded vessels, the

introducing air into the compartment, under pressure, to expel the water, preferably by means of an air-compressor mounted on the upper deck of the vessel, a pipe, connected to the

or repair permanently, according to the nature of the injury.

Fig. 1 represents a view of a stranded vessel resting on a rock. A hole is stove in one of the compartments or holds, flooding same. Fig. 2 is a somewhat similar view, showing compartment rendered air-tight, braced to withstand the internal pressure. An air-lock is shown applied to the compartment, and means for the introduction into the compartment of air under pressure. It is understood that the above mentioned of procedure may be applied in connection with any hold or compartment which has become injured.

When two or more compartments have been injured and the water has filled in, they may all be treated in the same manner, the air being introduced simultaneously into all of them from a single source of pressure. Under these circumstances, the degree of pressure of air necessary to expel the water may vary in the different compartments according to the location of the leak, the list of the vessel, and other conditions such as

invention of W. W. Wotherspoon, of New York, N. Y., and R. O. King, of North Tonawanda, N. Y.

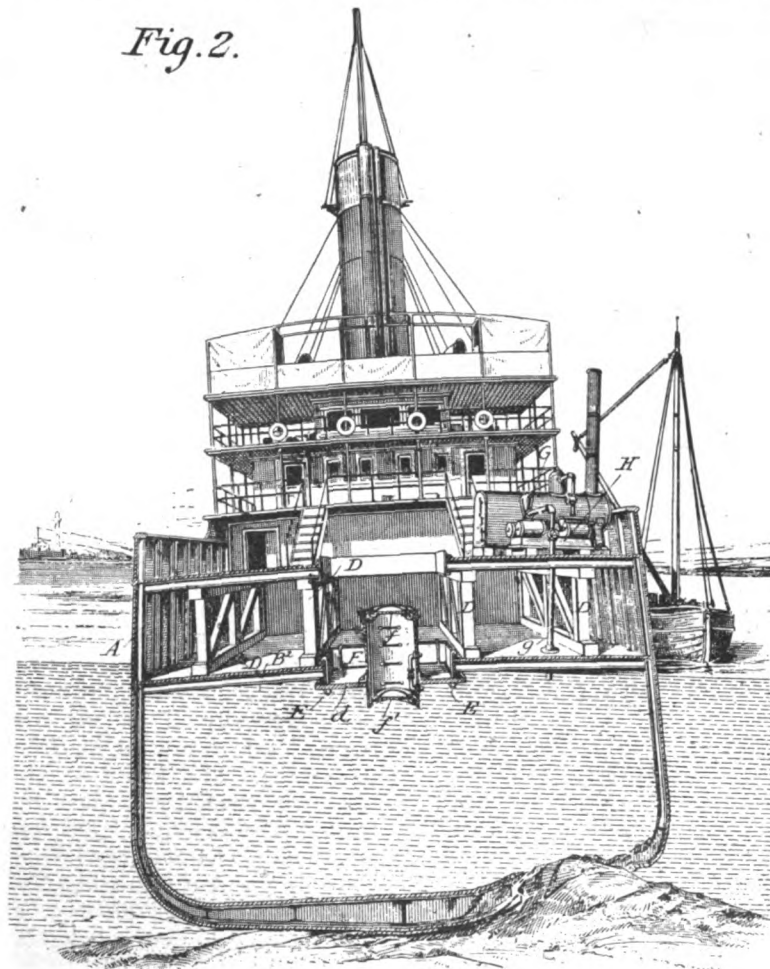
This method involves the treatment of the wrecked vessel so as to render the compartment or hold where the injury has occurred air-tight, or substantially so; the introduction of air into said hold or compartment under pressure to expel the water; and, finally the provision of a means for permitting access into the hold while the pressure is maintained, in order that proper repairs may be made.

In the practical application of this method, all openings in the flooded compartment, such as ventilators, ports, or funnels, are closed air tight, so that the necessary pressure of air may be obtained therein to expel the leaking water. The deck of the hold, to withstand the internal pressure, is first strengthened. This strengthening may be accomplished by having beams or braces applied between the deck of the injured compartment and the deck above, or other means suitable to the formation or structure of the vessel. The compartment is next closed air-tight by the application of a plate or covering to the hatchway, the plate being fastened by stay-bolts against the edge of the coaming. A rubber gasket is interposed to form the air-tight joint. The application of an air-lock, such as is employed in connection with caissons, consisting of a chamber having a door communicating with the flooded compartment, and the second door communicating with the outside, provides a means for access into the compartment while the pressure is maintained. The next step consists in

air-compressor, leading direct into the compartment.

While the pressure is maintained, workmen, through the medium of the

Fig. 2.



air-lock, may enter the hold and make such repairs as may be necessary to enable the ship to be towed into port,

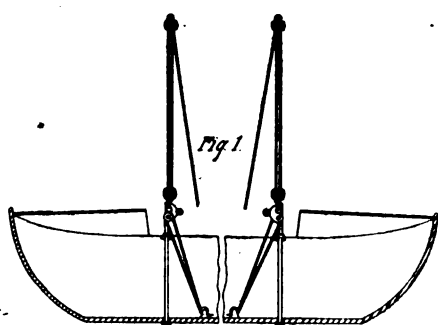
would cause the existence of different hydrostatic pressures. To meet these conditions, it is proposed to provide for

adjusting the air pressure admitted to the several compartments, according to the resistance to be encountered. This may be effected in a variety of ways, but, conveniently, by the application of reducing valves to the pipes through which the air enters the compartments from the compressor.

BOAT-RELEASING DEVICE.

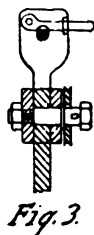
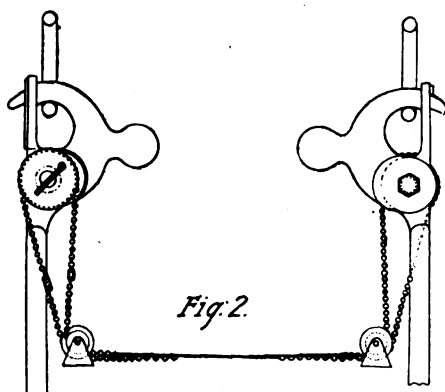
At the present time, when life-saving apparatus aboardship is occupying so much attention, the boat-releasing device of Harry G. Oliver, of New York, will be of interest.

This invention relates to a boat-releasing device for use in lowering a lifeboat, or other boat, from a vessel, the object being to provide improvements so



that both ends of the boat are released simultaneously, and prevent the serious and oft times fatal accidents which frequently occur by reason of one end of the boat being released before the other.

The accompanying illustration shows three views of this apparatus. Fig. 1



is a sectional side view of a lifeboat provided with the improved releasing device connected to the ordinary lifeboat tackle, Fig. 2 an enlarged view of the releasing device, Fig. 3 is a sectional end view of the gear. The general principles of

the device are as follows: Two rods, passing through the keel and transverse stays of the boat, have at the upper ends two flattened heads and below these heads enlarged and flattened portions through which bolts are passed. On these bolts hooks, semicircular in form, are mounted, the pivoted ends of the hooks being much larger than the free tapered ends. The convex sides of the hooks are directed toward each other and are provided with weights which project radially therefrom. The outer sides of the rods are provided with pivoted latches or locks adapted to rest in transverse notches in the projecting ends of the hooks, the heads being provided with keepers adapted to receive the free ends of said latches, as seen in Fig. 3.

A series of grooved pulleys and chains connecting the hooks prevent the possibility of either hook acting separately and dropping one end of the boat independent of the other, the movement of one of the hooks will also operate both.

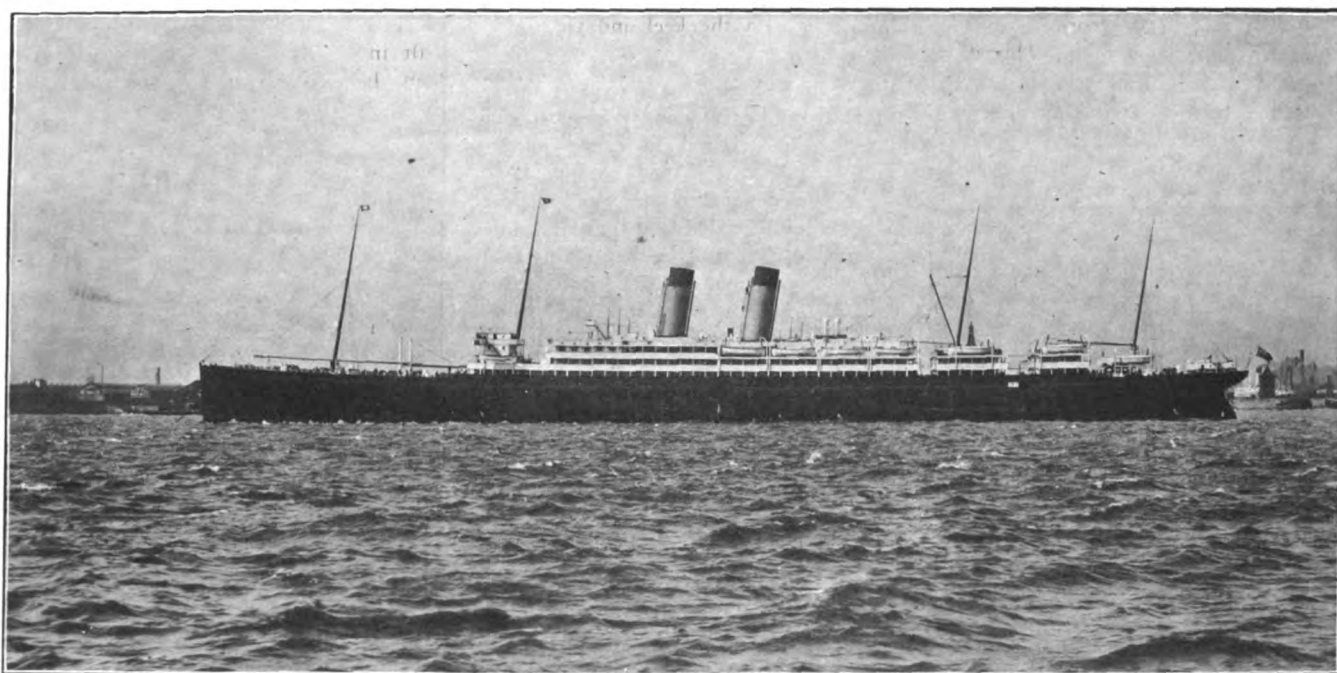
The chain, which is connected to the pulleys by some suitable pin arrangement, is provided with a spiral spring the object of which is to prevent the breaking of said chain and permit it to yield if too great a strain is thrown on it at any particular time; a turnbuckle regulates the length of chain.

In operating the device the boat is swung overboard with the hooks in position. Before lowering away the boat the latches are raised and turned backwardly so that they will not engage the free ends of the hooks. When the boat strikes the water, the weight of the boat being released from the links will cause the weights to turn the hooks downwardly, thereby freeing the boat.

THE NEW WHITE STAR LINER ADRIATIC.

The new White Star liner Adriatic sailed from Liverpool to New York on her maiden voyage on Wednesday, May 8. During the time she has been at Liverpool, since leaving the builders, she has attracted a great deal of attention, and on the day she was open for public inspection, about 8,000 persons availed themselves of the opportunity of looking over the largest liner at present in the Atlantic service. She was also generally inspected upon her arrival in New York. The Adriatic is a vessel of 25,000 tons, and is a remarkable contrast to the first Adriatic. The new vessel was launched on Sept. 20 last, and her length over all is 725 ft. 9 in.; breadth, 75 ft. 6 in.; depth about 50 ft.; gross tonnage, 25,000, with a displacement of over 40,000 tons, and with her vast accommodation for 3,000 passengers and her ship's com-

pany, she marks an enormous advance upon the old Adriatic, which, built in 1872, was 449 ft. long, 40 ft. 9 in. beam, depth 30 ft., gross tonnage 3,887 tons, and passenger and crew accommodation for 1,012 all told. The old Adriatic did excellent service, but the new ship based upon the lines of the Baltic represents the latest achievement in the building of passenger vessels. The Adriatic is the largest of all British twin-screw liners, and represents, not only in material, construction and stability, but also in splendor, comfort and spaciousness of accommodation and adornment, the highest expression of the ship builders' art. In every essential respect the vessel is "well found" and she possesses all the comforts of a home and most of the advantages and luxuries and much of the spaciousness of a first-class modern hotel. She is divided into twelve water-tight compartments, and has nine steel decks, while the double bottom extends through the whole length of the hull, thus adding a special element of safety. The water-tight doors are upon the latest and most approved principle. There has been a very careful consideration of the distribution of weights in the vessel, so that she may steam easily in any seaway, and it is confidently believed that the Adriatic will be distinguished by unsurpassed sea-going qualities, and a complete absence of vibration, thereby adding very largely to the comfort of travelers. The engines are of great power, and consist of two sets of quadruple-expansion type arranged on the "balanced" principle which is so advantageous in preventing vibration. Generally, it may be said that the arrangements on board resemble those which have been so much appreciated in the great ships of the White Star line such as the Baltic, Cedric, Celtic and Oceanic, with many new features added. These may be cited at once. In order to facilitate communication between the various decks, an electric lift runs from the first-class entrance on the boat deck to the dining saloon three decks below, thus serving the boat deck and the upper deck as well as the promenade deck and upper promenade deck. Another new feature is a large gymnasium provided with an ample supply of apparatus, so that the passenger may keep himself "fit" during his sojourn on board. Other notable innovations are in the character of the bathing arrangements, and particularly in the provision of Turkish baths. They consist of the usual hot, temperate and cool-



NEW WHITE STAR LINER ADRIATIC.

ing rooms, with shampooing rooms, a plunge bath, and massage couches. It is likewise worthy of remark that three electric baths have been provided. There is also the usual barber shop fitted up probably better in the Adriatic than in other Atlantic ships. The photographer's dark room, which will always be available during the voyage, is another feature sure to be highly appreciated by tourists. Again, there is an inquiry office conveniently placed at which all information is obtainable by the traveler.

Throughout the ship there is not

only great strength and sea-going efficiency, but greater roominess with every evidence of luxury and taste in adornment and fittings. The amount of headroom is unusual, and the spaciousness of the entrances, apartments and suites, and the width and length of the breezy promenades are a very notable feature on the new vessel. The staterooms are lofty, well lighted and admirably ventilated, all the arrangements having been facilitated by the great beam of the vessel and the height between the various decks. It has thus been possible to provide rooms of exceptional

size, and the accommodation for the first-class is unsurpassed and unequalled on any ship. The accommodation for second class passengers, if less elaborate is not in any degree less satisfactory than that for the first-class passengers, while for third-class the provision is spacious, ample and satisfactory, and represents the high-water mark of the arrangements for trans-Atlantic travel. The Adriatic has, besides, a very large cargo-carrying capacity, and the loading and discharging arrangements are of the latest and most efficient type. She has a well supplied Marconi house, and another notable feature which adds to the element of safety, is the submarine signaling apparatus. In every respect the managers of the White Star line and the builders have exerted themselves to provide a vessel which is a veritable triumph of marine architecture, and one which will certainly afford boundless satisfaction to the thousands of voyagers who will be privileged to travel by the Adriatic.

The Adriatic, on her return trip from New York on May 22, proceeded direct to Southampton, and the regular weekly mail and passenger service from Southampton and Cherbourg to New York was inaugurated with the sailing of the Adriatic from Southampton on June 5.

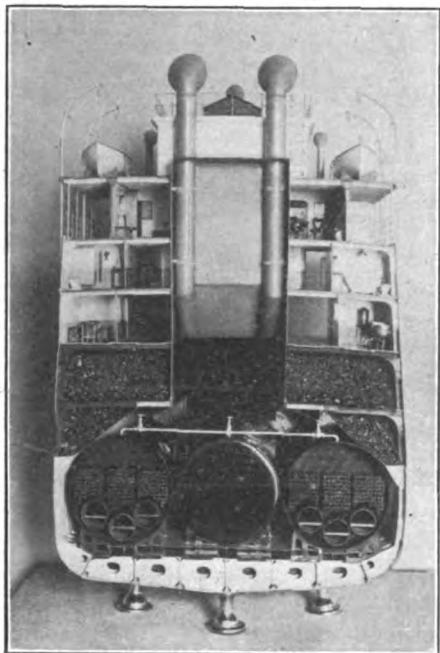
The steamer F. D. Ewen which was sunk in the Soulages canal has been pumped out and raised by the Donnelly Wrecking Co.



FIRST CLASS STATEROOM OF THE ADRIATIC.

MARINE MODELS AT JAMESTOWN.

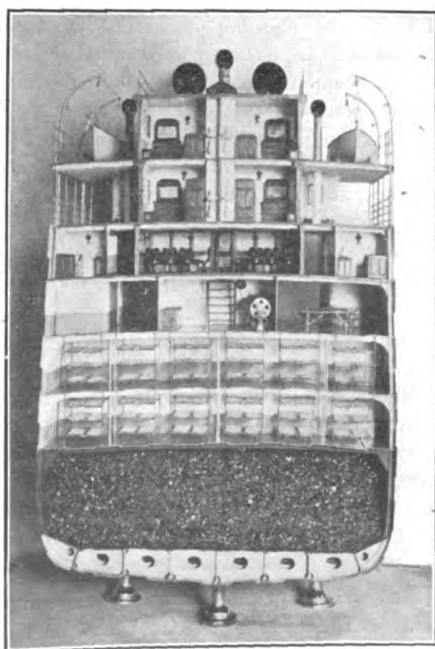
To the man who delights in little things well done the Jamestown exposition furnishes a display that will prove particularly attractive. We refer to the models of various vessels



CROSS SECTION ARMY TRANSPORT SHERMAN.

in the naval and army transport service comprised in the government exhibit.

These little ships are in every respect as true to design as their huge prototypes. Take the model of the 10,000-ton army transport Sherman as an example. This miniature ves-



CROSS SECTION ARMY TRANSPORT SHERMAN.

sel is constructed on a scale of $\frac{1}{4}$ in. to the foot, giving it a length of 12 ft. From the smallest winch to the 6-inch high, triple-expansion engine, from keel to mast head it duplicates the original in every particular.

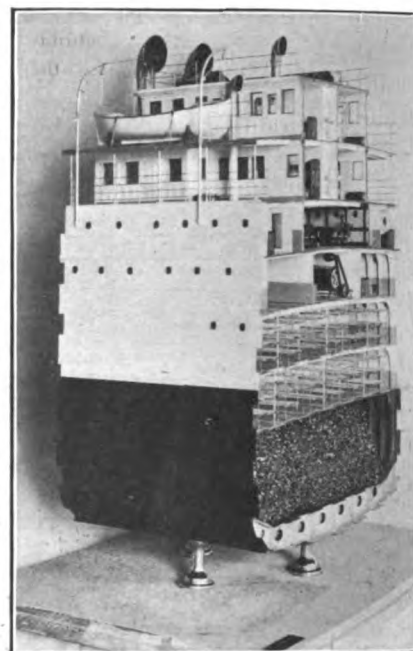
To the general public the outboard models will probably prove the most attractive, but to the sea-faring man the longitudinal and cross-sections will be of far greater interest. Showing as they do the exact proportions of the interior of the boat one can gain as comprehensive an idea of its construction as in examining the Sherman itself. Each compartment, bunker, stateroom; every gun, windlass, shaft and bit of gear is reproduced in its relative size. That over 10,000 separate parts are involved in the longitudinal section alone is sufficient to form an idea of the beautiful accuracy and workmanship required in the construction of these models. The photographs published herewith give an idea of the accuracy and minuteness of detail displayed in these models. The cross-section is understood to be about the only one in existence of its kind. It illustrates perfectly what a vessel looks like when cut in two crossways.

Other features of the exhibit are models of the 16,000-ton battleship Connecticut, the 14,500-ton cruiser Tennessee and a reproduction of the naval review at Oyster bay last September, comprising models from 2 to 5 in. in length of the forty-five vessels engaged in the maneuvers.

These models were produced in the shops of H. E. Boucher, who for a number of years held a responsible position in the department of construction and repair at Washington and under whose direction the recent World's Fair naval exhibits have been arranged for the government.

Some time ago Mr. Boucher resigned from the service to devote his time to model making for the various shipping industries and industrial concerns of the country as well as for the government. Since opening his shops at Maiden lane, New York, the field of work has become so extensive that models are now being made of engines, ore-handling machinery, grain carriers, dredges, etc., as well as for marine models. One specialty of the company that is assuming importance is that of furnishing supplies to ship builders and owners for finishing plating models for show purposes.

This industry seems to have great possibilities before it, little appreciated until now, as the American man-



SECTION ARMY TRANSPORT SHERMAN.

ufacturer is rapidly coming to understand that a really accurate working or show model is of invaluable assistance in presenting his product to the prospective buyer.

DEVELOPMENT OF THE GERMAN NAVY.

The most important event during the year was the decision to build six large cruisers for foreign service. Both the Imperial dockyards and private ship building concerns have been busily employed and the new additions to the fleet voted last year comprise two battleships, a large and a small cruiser, a turbine cruiser, a mining vessel, and two divisions of large torpedo-boats of 525 tons, with a speed of 30 knots. During the year two battleships were launched, of 13,200 tons, two large cruisers of 11,600 tons, two small cruisers of 3,450 tons, and three special vessels, altogether having a displacement of 59,570 tons. In the course of construction are, further, two battleships, which have to be ready next year, three small cruisers, and some smaller craft. Two battleships, a large cruiser, and several smaller vessels have recently completed their trial trips. The personnel of the German fleet now comprises 1,470 officers, 241 naval engineers, 208 doctors, and 171 commissariat officials; the number of men rose during the year from 31,788 to 34,078.

The steamer Saxona, which struck at the Soo last week, was only slightly damaged.

THE LUNKENHEIMER CO.'S EASTERN BRANCH.

The Lunkenheimer Co., Cincinnati, O., has established its eastern office and warehouse in much more commodious quarters, in the building at 66-68 Fulton street, New York, recently erected, Alfred J. Jupp managing this division of the company's business. In making provision for an adequate stock from which to supply the eastern and Atlantic coast trade easily and quickly, it was necessary to use to the best advantage the space

ly interfering with natural or artificial light, owing to the open character of the construction. The planking of the walks also serves to brace against any lateral movement, likewise affording convenient approaches to the upper courses of shelving. The unit material used is $\frac{7}{8}$ -in. lumber, black walnut finish and so built in unit form that, if necessary to move it at any time, each section or unit could be readily released from its adjoining unit without injury or having an unwieldy mass to transport from one building to

unit facing the runway; on top of Nos. 10 and 12 there are three units, one facing the runway, the others being reached from the gallery. No. 14 is the only special section, necessarily so on account of the interference of a supporting column. Over units numbered 9, 14-19, 28-33, 38, 40 and 41 are placed similar units, facing as do the units below which support them. The several spaces marked X in the diagram are kept for storing excess stock.

Some conception of the comprehensive stock carried at this depot is af-

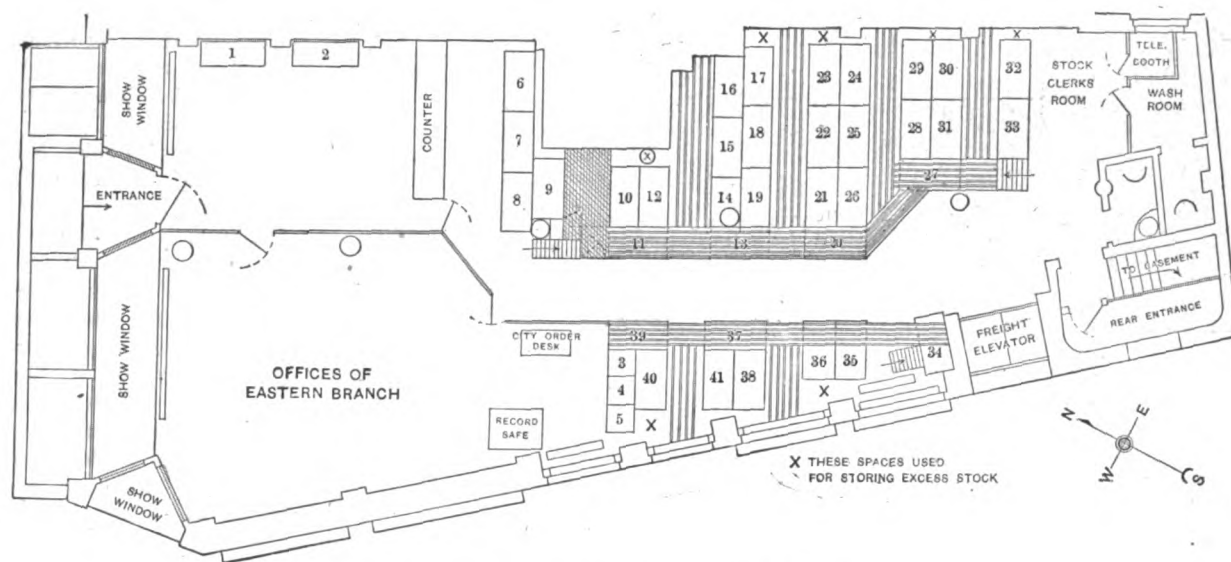


FIG. 1.—ARRANGEMENT OF LUNKENHEIMER OFFICES.

occupied, and by somewhat unique methods prepare for the accommodation of a large assortment as well as sufficient quantities, so arranging the irregular floor space as to have it attractive in appearance. The building fronts on Fulton street and there is a narrower street on the westerly side, Fig. 1, showing a plan of the street floor.

The dimensions approximately of the main floor are 35 x 80 x 20 ft. The problem was to utilize such an irregular space so as to combine an office with the necessary shelving many kinds of goods, and yet secure harmonious results. In planning a total of 1,400 bin spaces, all 2 ft. deep and 4 ft. wide, there being a lower tier and upper gallery in a room with a 13-ft. ceiling. The units are made about half and half, with and without backs. The units are arranged in aisles, backing up to each other, so that each passageway affords access to two groups of shelving, right and left. The same results are obtained above by means of foot walks, the slats or tie pieces, of which form rafters for the gallery footways, without material-

another. In such an event, the lighter kind of stock could remain in the various compartments, the section tipped backward and in this position run onto a cart without breaking the bulk.

To better comprehend a skillful adaptation of an unavoidably awkward floor space, as depicted in Fig. 1, it may be explained that the numerals for the most part represent uniform stock containing units each 6 x 4 x 2 ft. Nos. 1 and 2 locate the position of wall sample cases forward of the counter, 3, 4 and 5 designate office sectional units, while the major part of the remainder refer to units containing the smaller articles packed usually in neatly labeled slide cover wood boxes. To properly understand the arrangement of the upper space, used clear to the ceiling, some detailed reference will be helpful. Units 9 and 10 are roofed over to make suitable space in which to keep stationery supplies. The tops of units 11, 13, 20, 27, 34, 37 and 39 are utilized to provide a connecting runway to the aisles of the upper galleries, indicated in Fig. 1 by the closely spaced lines.

On top of Nos. 35 and 36 is set one

fording by a mention of some of the principal classes of goods made by this company. There are valves for steam, water, gas and oil; lubricating devices, for ordinary gravity and pressure systems, including cylinder and bearing lubrication, and a complete stock of grease cups and mechanical lubricators, for marine and stationary service. There are also mechanical lubricators, for auto and high power motor boats; likewise a comprehensive line of specially designed cocks and fittings for gasoline piping, which the management believes is the largest assortment of kindred goods carried in New York. In valves there is stock of bronze goods for high pressure marine service as large as 8-in. diameters up to 300 lbs. pressure per square inch. There is also a complete line of lubricating devices for gas engines and air compressors. The lubricating devices for steam and gas engines and auto service can be obtained in rough and polished brass and nickel plate. The lines of valves also include standard steam types and also special design for dairy and laundry purposes.

In addition to utilizing New York as

a distributing center for the eastern territory and coast trade, the exacting details relating to much of the company's export business are supervised at this office. Special care is given to the packing of all breakable and polished material in serviceable and attractive dovetailed slide cover wood

Slings are provided for hanging in davits, and it is owing to the space and weight being limited for this purpose that special provision has had to be made to keep weight down to a minimum while still leaving a good margin for strength.

The contract stipulated 13 cwt.

those in search of a small, well-built and handy motor boat.

NEW BRITISH 22½-KNOT TURBINE STEAMER.

The new turbine steamer *Victoria*, built by Messrs. Denny Brothers, of Dumbarton, for the Dover-Calais service of the South Eastern & Chatham railway, carried out her trials on the Clyde on April 22 when she attained a speed of 22.576 knots, being 1½ knots in excess of the guarantee, and sufficient to ensure that she will do the channel passage under the hour. The *Victoria* is generally similar to three previous turbine vessels built by Messrs. Denny for this service, the *Queen*, the *Onward* and the *Invicta*. The last-named is the record holder between Dover and Calais, having done the passage in the smart time of 52 minutes. Another named *Empress* was launched a week ago. All five are fitted with Parsons' turbines and are notable ships of this class, demonstrating the success both of the new system of propulsion and the endeavors of Messrs. Denny to extend its adaptability to commercial steamers. These boats are 310 ft. long, with a molded breadth of 40 ft. and a depth of 24 ft. 6 in. to awning deck which extends from stem to stern.



MOTOR TENDER OF THE STEAM YACHT RUBICON.

boxes after careful wrapping in paper especially adapted to this purpose, applying alike to all goods, whether designed for domestic or foreign trade.

MOTOR TENDER FOR STEAM YACHT.

John I. Thornycroft & Co., Ltd., Cheswick, have just completed a motor tender for a steam yacht. She is a particularly smart looking craft, being carvel built of mahogany, close jointed and varnished inside and out. The decks forward and aft are also of mahogany. The floors are covered with American elm gratings. The length is 19 ft. 6 in. and the maximum depth 3 ft. 8 in. The power is transmitted by a Thornycroft 6 B. H. P. motor through a reversing gear to a Thornycroft solid propeller of large diameter specially designed for towing. It is anticipated that a towing speed of about four miles per hour will be easily maintained, and in view of the fact that the *Rubicon* is of 90 tons Y. M. this will be a very satisfactory performance.

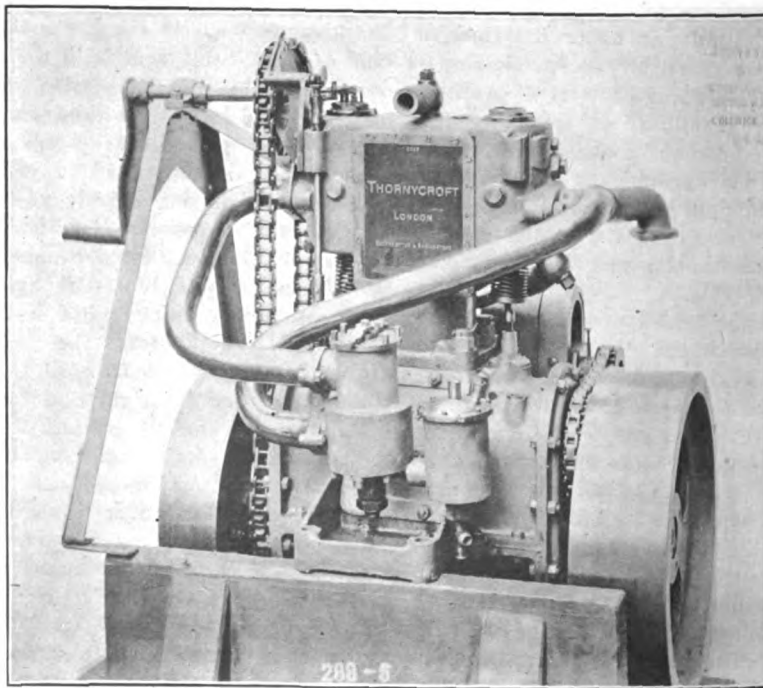
The fuel tank is of brass, and all petrol and water pipes are of solid drawn copper. The motor is completely covered and protected from rain and spray by a neat mahogany casing.

The boat is provided with two hoods, one over the engine space, and the other over the cockpit, each fitted with Talc lights.

but the builders find they have ample margin, the actual weight being about 12 cwt., while the staunchness and seaworthy qualities are very apparent, and in no way impaired by the light construction.

A boat of this type would be

E. S. Wheeler, of the United States



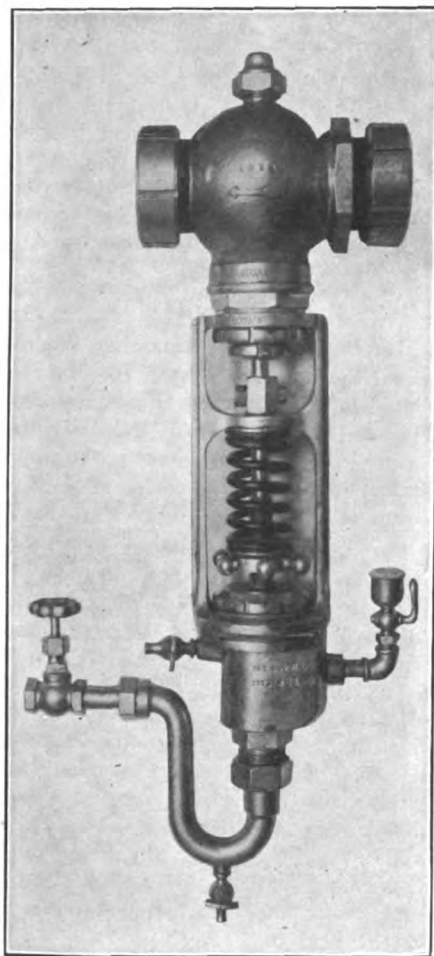
MOTOR OF THE TENDER OF THE STEAM YACHT RUBICON.

equally useful for up river work or cruising in more or less sheltered waters, and its moderate initial cost, economy in fuel and maintenance should recommend it strongly to

Engineer's office of Detroit, visited Bay City last week on the United States steamer *Hancock* for the purpose of determining the necessary improvements to be made in Saginaw river.

IDEAL PUMP GOVERNOR.

A pump governor that will govern—that can be depended on at all times to act—that doesn't require constant adjusting and attention—not too delicately constructed, yet delicate enough to enable pressure to be regulated to the



IDEAL PUMP GOVERNOR.

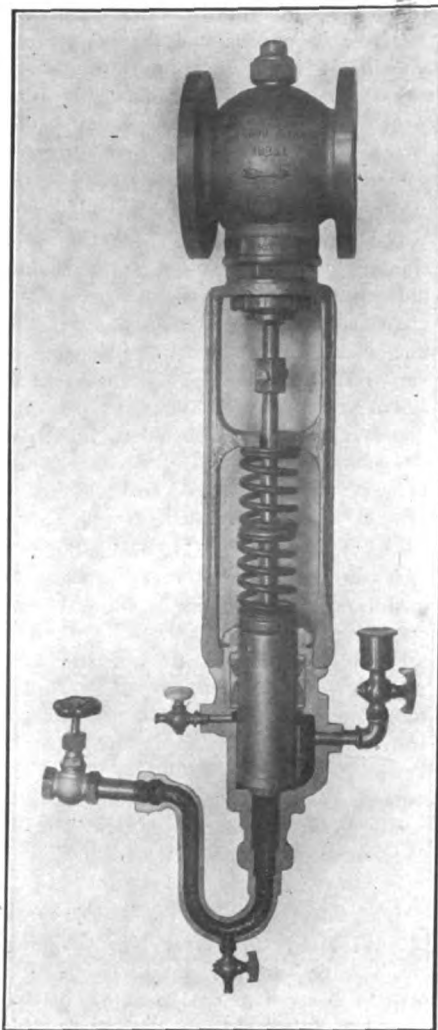
fraction of a pound—is what the marine engineer most desires.

That there are many governors and like devices on the market, the engineer knows. He also knows that there are governors and like devices that have failed him at the critical moment, accounting for leaking or blown-out joints, burst hoses, and disabled pumps. Then it is that he discovers the governor is out of order, working parts defective, or a thorough cleaning out necessary.

In the large freighters or passenger steamers it is no uncommon sight to see two gangs of sailors hosing along the decks in the quiet watches of the night, one gang following the stream of water on each deck, or working for'ard and aft simultaneously. Accordingly, the bo'sun has to depend on the men coupling up the hose at the hydrants, to see that the pump has at

all times a free delivery. The engineer on watch, with the main engines and numerous auxiliaries in his care, cannot spend too much of his time in the vicinity of the pump. Occasionally he will miss the rhythmic beat, hear the pump strain and groan with a steadily decreasing stroke, and know from experience that through the negligence of the men on deck the discharge is choked at the hydrants. He may, if prompt in shutting down the pump, avert an accident, otherwise, with a crack like a pistol shot, a joint is blown out in the pipe-line or pump. There may, later, be an investigation, but the result is always the same, the engineers have to re-make the joints.

If the fire pump, used in washing down the decks, is equipped with a proper governor, such accidents cannot happen.



IDEAL PUMP GOVERNOR.

The kinking of a hose will not be the means of the hose bursting or "carrying away" at the coupling; the opening or closing of one, two, or several hydrants, will not alter the pressure of the supply, and the governor can be regulated to operate the pump immediately

the pressure is relieved at the hydrants, the pipe line at all times being filled with water at the required pressure.

To meet these requirements the Ideal pump governor, simple in action and constructed to overcome the difficulties experienced hitherto by the engineer handling such devices, has been developed. This governor, constructed to hang in a vertical position beneath the steam pipe line, has the usual spring regulator controlling the pressure by an adjustable nut. The piston and water pressure cylinder are so arranged that at all times they are surrounded by thick cylinder oil which acts as a lubricant, and prevents corrosion or any deposit forming. This oil fills a U-shaped trap pipe at the base of the governor, receives the pressure for controlling through a small pipe leading from the discharge side of the pump, and prevents the water in the discharge from entering the water pressure cylinder. Through a drain cock on the trap pipe this oil can be discharged when necessary, the cock being used, also, to discharge any sediment formed. A special packing, the invention of the patentee, prevents any loss of oil through leakage, the same packing being on the steam end of the governor. This governor can be applied to any type of pump.

The "Ideal" governor is made by the Ideal Automatic Pump Governor Co., Nos. 15 to 25 Whitehall street, New York.

SMART ENGINEERING FEAT.

The S. S. Earlford was towed into Southampton recently with a cracked cylinder, and was placed in the hands of Messrs. Day, Summers & Co., Limited, of the Northern Iron Works. The engines were disconnected and lifted out of the vessel, and it was subsequently found that both cylinders were defective and required renewing. This, of course necessitated two new cylinder patterns and two new cylinder castings. These were made, fitted up in the shop, and the engines lifted back aboard, the whole job satisfactorily completed, and the vessel sailed six weeks from the day on which the work was taken in hand. In addition to the new cylinders, a new connecting-rod had to be made, the engines were thoroughly overhauled, and bearings renewed.

England is said to be reaping the advantage of being the first to produce a monster battleship. Other powers are now sending them orders for vessels with which to knock the Dreadnought into a cocked hat.

TRADE NOTES.

The Sirocco Engineering Co. announces the removal of their offices and showroom to the new West street building, New York city.

The Spence Mfg. Co., St. Paul, Minn., are installing two of their conveyors on the docks of the Western Transit Co., at Buffalo.

The Standard Railway Equipment Co., St. Louis, Mo., announce a change in the address of their New York office from 122 Liberty street to No. 90 West street.

Among the devices approved by the board of supervising inspectors of steam vessels at their meeting in Washington last January was the Welin quadrant davit.

The Robins Belt Conveying Co., Park Row building, New York, are installing two of their belt conveyors on the Cleveland & Buffalo Transit Co.'s docks, at Buffalo.

The Fort Wayne Electric Works, Fort Wayne, Ind., has just put out three bulletins regarding types of small power motors. These bulletins are complete in descriptive test and are beautifully illustrated. They are to be had for the asking.

The new factories of the Bird-Archer Co., manufacturers of Bird-Archer boiler compounds, are in course of erection at Jersey City, N. J., and will be completed in the early part of the summer. The entire laboratory and manufacturing staffs will be located in this main factory.

The Knecht Bros. Co., Cincinnati, have just put out a postal card descriptive of the Knecht friction sensitive drill. It is represented to be the simplest and most reliable drill on the market and the regulation of speed is instantaneous without shifting belt or stopping machine.

The Crane Co., Chicago, Ill., has just issued a catalog descriptive of valves, fittings and appliances. It is of a very convenient size and contains a complete index. In addition, there is attached on a perforated sheet a post card which may be used to direct the company to send a catalog to anyone that may be interested in these specialties.

The Barriett Electric Mfg. Co., Cincinnati, has just issued bulletin No. 5 descriptive of type E motors and generators. They are designed to meet the demand for first-class, direct-current machines which will withstand hard work and rough usage. The bulletin will be sent to anyone interested upon request.

The Mulholland hatch fastener, manufactured by M. Mulholland, 1203

Citizens building, Cleveland, is adapted to all styles of hatches and coamings, both steel and wood. Capt. Mulholland has been very successful in adapting the fastener to new style of hatch covers latterly adopted on the lakes and has also extensively introduced it on the coast.

The Joseph Dixon Crucible Co., Jersey City, N. J., has issued a splendid calendar, the pictorial part of which represents the City Investing building now in course of construction, Broadway, Cortlandt and Church streets, New York city. The structural steel of this building is, as has already been announced, protected from corrosion with Dixon's silica graphite paint.

The Smooth-On Mfg. Co., Jersey City, N. J., recently issued the second edition of their No. 5 Instruction Book. This book tells a few of the many ways in which the different Smooth-On specialties have been used and the results obtained. It is a very interesting book and valuable to all manufacturing concerns, especially users of steam. The book will be sent free of charge to any sending their name and business address to the company.

The D. T. Williams Valve Co., Cincinnati, O., have just put out a booklet illustrating their complete line of oil and grease cups which they manufacture. The line manufactured by this company is very comprehensive. The cups are represented as being strong, durable and non-breakable. The booklet illustrates the cups completely, the wash drawings being very numerous. The book will be sent to anyone interested.

The Jeffrey Mfg. Co., Columbus, O., has sent out a postal card showing the evolution in coal mining. The post card contains two photographs, one showing the donkey hauling a truck in the level and the other showing a Jeffrey electric motor operated by a trolley drawing a train of cars. The photographs are labeled "Yesterday" and "Today," which isn't far fetched, as it is only a little while since the donkey or mule was the only mode of locomotion employed in coal mines.

The latest catalog, 072, issued by the C. W. Hunt Co., West New Brighton, N. Y., is entitled Engineers' Edition and is devoted to coal handling machinery for power stations, coal yards, shipping docks etc. The book is a convincing one. Very sensibly the company says that its customers are those who use and wear out the articles they purchase and that consequently quality takes precedence of cost with them. The company, therefore, does not care to sell a machine until it is in every respect satisfied with it and naturally seeks that class of pur-

chasers who wish articles built thoroughly well from the best materials. The catalog is very complete in types of coal handling machinery which obviously it would be impossible to adequately describe in a brief notice. Everyone interested is advised to write for it.

James L. Robertson & Sons, 48 Warren street, New York, have just issued a postal card concerning the Robertson-Thompson improved indicator. This device tells what's doing in the cylinder and is represented as showing how to save fuel and steam and get more power. Incidentally the postal card also advertising Eureka packing with a special recommendation of the Red Diamond brand.

PERSONALS.

Matteson & Drake announce the removal of their office from 506 Bourse, Philadelphia, to the Importers and Traders building, 59-61 Pearl street, New York, retaining representation in Philadelphia with Elisha Webb & Son Co., corner Chestnut and Water street.

The firm of Crowell & Peck has been dissolved and Mr. Francis J. Peck, formerly of Crowell & Peck, purchased and acquired all the property of the dissolved firm of Crowell & Peck, including the offices and laboratories in the Williamson building, and the crushing and testing plant on River street, Cleveland, together with the leases, fixtures, appliances and appurtenances. Mr. Peck is now engaged under the firm name of Francis J. Peck & Co., in all the lines of business formerly conducted by the firm of Crowell & Peck. Mr. Peck has been elected a member of the American Institute of Mining Engineers.

Modern Society tells the following story: A pilot was once taking a ship northward. The captain, toward sunset, bade him go below and help himself to a glass of cold tea. After taking the tea the pilot proceeded to munch a biscuit. Now, the captain owned a large monkey, and this creature sat drowsing in a dark corner of the gloomy cabin. The pilot said: "A gusty day, sir," and the monkey shrugged its shoulders. The pilot, with affable gruffness, went on: "The south light is away on the port bow, sir." There was no answer. But the pilot was persistent. He continued: "We'll be over the bar, sir, in an hour." Failing to get a reply, even to this pleasant information, the pilot went up on deck again and, taking his place beside the captain on the bridge, said: "What a quiet chap your father is!"